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ADDRESS.

CHAIRMAN'S ADDRESS.

Read in the Section on State Medicine, at the Forty-sixth Annual Meeting of the American Medical Association, at Baltimore, Md., May 7-10, 1895

BY LISTON HOMER MONTGOMERY, M.D.

CHICAGO, ILL.

While in attendance at the forty-fifth annual meeting of the AMERICAN MEDICAL ASSOCIATION, which was held in that great metropolitan city located at the entrance of the Golden Gate where the commerce of all nations enters that wonderfully progressive and healthful State, the honor was conferred upon me in being elected chairman of this model Section for the year 1894-95. In accepting so much honor I am not unmindful of the responsibility that has devolved upon me. On the other hand, I am profoundly cognizant of my inability to discharge the duties as your chairman in as efficient a manner and to such an eminent degree of satisfaction as did my immediate predecessor, and others who have been chairmen of the Section prior to this time.

As your presiding officer, I desire most cordially and sincerely to return my heartfelt thanks to the members of the Section, and to earnestly request your kind and courteous indulgence in what may be my apparent or real shortcomings.

It is with pardonable pride that I am permitted to congratulate you on the presence of so large an attendance of ladies, delegates and members, and the unprecedented number of essays and papers announced to be read by the official program for this Section.

History records the fact that this is the third time the annual gathering of the ASSOCIATION has convened at Baltimore, but it is the first time that the Section on State Medicine has met in this city since its organization.

Not one of the great men are alive to-day who were officers of the ASSOCIATION at the time the first annual meeting was held in this city, and not to exceed two of the officers of the ASSOCIATION in 1866 are living. One of these was First Vice-President of the ASSOCIATION at that time, whom it affords me sincere pleasure to greet and welcome to-day. I refer to our venerable professional colleague and friend, ex-President James F. Hibberd of Indiana, of whom I can say, to know him is to love and esteem him.

(After a glowing tribute to Baltimore and all its belongings the speaker continued): During the past few years, much has been written upon public health, preventive medicine, State medicine, domestic sanitation and the science of public hygiene, almost synonymous terms, I believe, for us to discuss at this time. Not until recently, however, has this department, or branch of medicine become so prominently recognized before the public. And each year it is being recognized to a greater degree in its broad field of usefulness. Its scope is widening to such an extent that State medicine not only embraces the subjects of general sanitary supervision of the country, including quarantine in all its details, domestic hygienic laws which embrace the pure-food question for the people; and should, in the main at least, include the topic, which well may be termed the physiological and medical uses of alcohol.

Isolation hospitals is another very important subject that will be discussed at this meeting of sanitarians. Bacterial life and microörganisms of various kinds will receive due consideration by the authors of the various essays and papers bearing upon those subjects and will be ably discussed by the learned gentlemen of the Section.

While there are a great many other subdivisions which you, as scientists, are familiar, with that very properly belong to and should be classified with this Section, your chairman will scarcely more than enumerate a portion of them, nor will he enlarge upon them in this address.

PHTHISIS PULMONALIS.

The field of study of the habitat and insidious ravages of microbes, micrococci, bacilli, etc., is a vast one, too marvelously comprehensive for me to do more than give the subject a passing review. Like the subject of electricity in all its intricate and various ramifications, the most marvelous discoveries of which may be looked for in the future, so, too, will the study of this form of life lead to hitherto unknown discoveries in the treatment of disease. That germs oftentimes do their work insidiously, slowly but surely, is evident, where, for instance, in some of the prisons and eleemosynary institutions of the country, subjects when they enter them in robust health sometimes within a few months become emaciated and physical wrecks. In this respect, phthisis pulmonalis takes the lead and fastens its tentacles upon this class of unfortunates, and as tuberculosis is the greatest scourge the human race has ever encountered, it is the most prevalent type of disease that criminals or the indigent class are subjected to in the institutions named. Notwithstanding, as in the past, scientific advancement in the future bacteriologic investigation of this intractable malady will, we believe, surely bring its ravages and destructive agents under a more certain degree of control. Sanitaria throughout various parts of the country are being established for the prevention, care and treatment of phthisis. Each of these sanitaria have a well equipped gymnasium, tennis courts, lawns, etc., and otherwise are provided with facilities necessary to combat this destroyer of human life.

The newest and latest therapeutic agents used in the rational treatment of phthisis are pilocarpin and

protonuclein. The former remedy was introduced by Dr. Louis Waldstein, of New York. At Berlin he has practiced the hypodermic method by successive injections of minute doses of it into the tissues of tuberculous subjects. As a result of this, there seems to be a gradual stimulation of the lymphatic system. In this connection I may add, that it is claimed also, that cases of lupus vulgans of many years' standing are relieved by using the remedy subcutaneously. Its activity, or pathology of action, as in tuberculosis, is the promoting, or increase of the secretions of the lymphatic glands.

Personally, I am not yet an enthusiast upon this so-called new discovery in the treatment of a disease that has baffled science for so many centuries, and to my mind their therapeutic value is overestimated, while pilocarpin may possibly do all that is claimed for it in the absolute cure of consumption, its action, if what is claimed for it is true, might be regarded more in the nature of a prophylactic, or preventive to a certain degree if used in the earliest stages, of phthisis, or even retarding the reinfection of a patient by fortifying his blood against subsequent inroads, or further invasions of the tuberculous difficulty, than as a curative agent of the disease after it has thoroughly manifested itself.

Toxalbumin, or antiphthisin of Klebs, is another of the so-called toxins used by that eminent German bacteriologist as a preventive as well as curative agent of tuberculosis when used in the early stages of the disease, and it is reported by Dr. Karl von Ruck, of Asheville, that he has practiced upward of twenty thousand inoculations of antiphthisin and has uniformly derived beneficial results. If this is true, it seems to me it should be more generally known.

While it is our duty to be ever on the alert to perform and suggest anything that will ameliorate the physical condition of our fellow-man, climatic conditions must be studied (everything else being equal) in the prevention and treatment of this class of our patients at any stage of the disease. That altitudes of moderate height, where the ozone of pineries in the mountain regions should be selected for at least a certain class of those afflicted in this manner is to my mind a *sine qua non*. That nature's ozone is a germicide and antiseptic is a well-known fact, which doubtless all of you have personally observed. Its prophylactic and hygienic properties will have the tendency to augment the oxyhemoglobin in the circulatory system, and I believe it is the opinion of conservative men also, that this potent remedy, in addition to its healthful tissue strengthening properties, through its action as above outlined, will sterilize the alimentary tract. In following these directions a goodly percentage of patients will result in complete recovery.

Other suggestions occur to us as to the prevention of phthisis, and especially where the disease is in its incipiency, which belong more properly in the treatment of the disease. A movement is on foot by those who are philanthropically inclined to erect sanitaria for the gratuitous treatment of consumptives in some of the southwestern portions of our country, notably in Texas, New Mexico and Colorado. Homes, or sanitaria of this kind for the indigent worthy class are a step in advance in our Christian Republic, to rescue them, as it were, and thus prolong many valuable lives.

Especially will these institutions be erected for the outdoor treatment of the more desirable class. Doubtless you all have heard of this proposition from other sources, but to me the topic is of so great interest that you will pardon me for reiterating it, in the hope perhaps that great benefit will be the result, if even the life of but a single case is prolonged or saved. While pure milk, along with strict attention to a well regulated meat diet, including fats that are easily combustible, and the judicious use of carbohydrates are helpful. In addition to the foregoing suggestions, there is a special value to be attributed to systematic physical exercise in cases of those disposed to phthisis. Psychologic therapeutics, or psychical sanitation, if I may be permitted to use this word, may very properly, I think, be classified or considered an important factor in the prevention as well as treatment of a not inconsiderable number of this class of patients. In a word, tissue metamorphosis of the ascending or building character is a much sought for result in the treatment of this malady. The prognoses, of course, will depend mainly upon the fundamental disease and the inroads it has made in a particular case.

LEPROSY.

At the meeting of this Section in San Francisco in June, 1894, my friend, Dr. Henry S. Orme, of Los Angeles, read an elaborate paper upon leprosy. The author therein stated that he believed there were more cases of the disease in California and elsewhere in the United States than was known. Your chairman fully indorses those views. To his mind there no doubt are isolated cases of leprosy in various parts of the country, notably in the States of New York, Louisiana and California, and possibly, also in the central, northwestern and other southern portions of the country, that are not publicly known. And while the Mosaic laws directed that all lepers be driven out of their homes, and their effects burned, such a general mandatory law if enacted throughout our civilized land would seem at first glance to be cruel and inhuman. But when we recall Biblical lore and the awful dread of what leprosy was to Moses and his people, or is to the Hawaiians and the inhabitants of the Philippine Islands, and of the Chinese Empire today, and which conditions actually exist among our own people where leprosy prevails, it appears to me that a pronounced movement should have long ago been inaugurated to establish at some remote point in the United States one or more leper hospitals, or one or more colonies for the lepers of this country to dwell. Recently, the secular press as well as various medical journals published an account or report of the death of a leper in New York city, and that there were many more cases of leprosy in the State of New York. That judicious and humane laws should be enacted for the compulsory segregation of this class of human beings is no longer a mooted point in my opinion. A colony for this class of afflicted people where they could live by themselves, should be established and maintained by the United States government. Treatment should be afforded them, and their condition ameliorated by every means that sanitary science can devise.

Any person who is suffering from a well defined stage of leprosy should be required to live there. Call these places what you will, sanitaria, or leper hospitals, a suitable institution should be provided for them, that the balance of their lives may be as

enjoyably and as profitably spent as possible, exercising great care that the intermingling of the sexes be prohibited. In this connection I may state that more than one year ago a movement was inaugurated for the establishment of leper hospitals, penal or reformatory institutions, at New Orleans and San Francisco. I am a firm believer in the segregation of this class of patients under the provisions or an analogous one to that just outlined. By so doing, the carrying out and adopting this plan judiciously in a thorough and painstaking manner, State medicine will be the means within the next two generations of banishing leprosy from our land, in the meantime, preventing foreigners who have the disease from landing upon our shores.

In the matter of the United States government having control of this class of people, I quote the following extract from the pen of Dr. Albert S. Ashmead, of New York city, in our JOURNAL of April 13, 1895: "I take in such affairs a higher ground than that of reporting a certain case to the local board of health, and according to my opinion, such cases should be reported to a United States health officer, and that the State or city board of health should have nothing to do with them."

While I agree with the Doctor in the first part of his remarks, I should not be willing to go on record as accepting the latter portion of his theory in this class of cases—no more than such theory would apply to the ordinary contagious or infectious class of diseases.

With reference to the presence of bacilli in leprosy, Dr. R. H. L. Bibb last year reported having examined thirty cases of tuberculous and five cases of macular leprosy covering a period of ten years, and never failed to find them in the secretions of tubercles, in blood drawn directly therefrom, in discharges from leprous ulcers, and occasionally in the sputum and the secretions from the nose. In the treatment, he and others have used Chaulmoogra oil, internally and externally. While this remedy is not regarded as a specific, if the treatment is begun early and persistently and unremittingly continued, associated with proper food and hygienic measures, many cases will recover, while many other cases, probably the majority, will receive no benefit.

Regarding Morvan's disease, scleroderma, Raynaud's disease, syringomyelia, etc., as being merely varieties of leprosy, these are hardly within the scope of this address to discuss, except to state that the preponderance of clinical and bacteriologic evidence goes to show that such is not the case, although these diseases in certain stages may have symptoms closely analogous to those of leprosy.

There is not one of us, I doubt, but entertains the view that variola, diphtheria, scarlatina, syphilis, leprosy, tuberculosis, cholera, actinomycosis homines, la grippe, anthrax, yellow fever and other specific diseases, whether they are zymotic in character or otherwise, as well as possibly pneumonia and carcinoma, whether they be sporadic in origin or not; that these are contagious, infective, endemic, or epidemic in form under certain conditions, particularly where climatic influences and sanitary environments are unhygienic in quality and kind. I should like to include tetanus, trichinosis, myxedema, etc., if time permitted. Whether, according to Dunglison, zymotic diseases are produced by "some morbific principle acting on the system," or, as is at present recognized, that each of them are of germ origin. I do not wish to be understood, however, as differing from able scientists and teachers in the belief that inoculation and transplantation of cancer from man to a lower animal will produce the disease. On the other hand, I believe this procedure rarely, if indeed, is ever successful in producing it, while it is asserted by various writers for myxedema, that this variety of tumor is successfully combated or treated by the oral administration of thyroid tablets or extract of the thyroid gland in some form.

SMALLPOX.

This disgusting malady should never be permitted to become epidemic or very rarely, indeed, of an epidemic character in any of the larger inland municipalities where there is a well equipped board of health. That it should be permitted to take such a course is, in my opinion, due to a lack of thorough and early measures to stamp out the disease; allowing that cases are sometimes concealed for a time from the authorities by ill-advised and unwise friends, this can not long remain so, and when discovered, thoroughness and radical means should be promptly adopted, in all that this term may imply, to suppress any further outbreak of the disease and to prevent its diffusion. Vigilance, promptness and efficiency should be the watchwords to characterize the executive health officer in any community. From him the people have a right to expect proficiency and competency, and if this servant of the people is unmindful of his duty it is little less than criminal negligence on his part, in not taking most thorough and prompt measures to quell an outbreak of the disease and use radical measures to stamp out the contagion that may be lurking in the premises.

Dr. Thomas Stevenson, of London, in his "Treatise on Hygiene and Public Health," says upon this topic: "Formerly, protection against smallpox once acquired was looked on as permanent and absolute; cases of secondary smallpox, usually very mild, we called horsepock, swinepock, etc., just as in Jenner's time the variolous nature of post-vaccinal smallpox, also very mild, as a rule was denied. From whatever cause obtained, the amount of protection varies according to the thoroughness of the protective procedures.

"Severe smallpox gives more enduring protection than mild smallpox. Smallpox inoculation gives most protection when followed by eruption, and a complete and multiple vaccination gives more lasting protection than does vaccination resulting in a single small vesicle.

"In the present century a second attack of smallpox is less frequent than formerly because, as a result of the practice of vaccination a primary attack of smallpox usually comes later in life, so that the protection it affords does not wear off in time readily to allow of a second attack.

"Protection by smallpox inoculation or variolation was introduced into general notice in England in 1721. The practice under the name of *buying* the smallpox seems to have existed in Wales from time immemorial, following the introduction of the practice in 1721. The simplicity of the eastern operation was discarded for a severe operation with untoward results, which soon brought inoculation, as a whole, into disfavor. After 1740 it began to revive, and in the hands of the Suttons and of Dimsdale it became

a mild and fairly safe procedure, with only one death in perhaps three or four hundred cases, but it perhaps tended to spread the disease by atmospheric infection, and it is a moot question whether in this way it did not do as much harm as good."

Under the heading, vaccination and revaccination, the historical methods so well known are dealt with, as also the relationship of smallpox to cowpox. The whole tendency of the evidence is to show that vaccinia is as Jenner had supposed it, variola of the cow, and that the virus of human smallpox is so attenuated in the bovine animal as to be deprived both of its quality and atmospheric connection and of its tendency to cause a generalized eruption, and that in this way the change in the calf from variola to vaccinia has the effect of removing the objectionable and retaining only the valuable part of the original disease.

DIPHTHERIA.

The prophylaxis and latest method of treatment of this oftentimes malignant malady scarcely needs mention, for this is already fresh in the memory of us all, and includes all that is implied in the new serum-therapeutics. That the antitoxin treatment in diphtheria, whether it is the use of protonuclein, previously alluded to, or the serum derived from the blood of the horse, is in antagonism to bacterial poisoning appears, to say the very least, philosophical, and while the present methods may not be those of perfection, like the study of electricity, as previously stated, the wonders of which already have been achieved are not to be compared to what hoped-for results may bring about. So that, what to-day may appear to be crude as regards electricity may, on the same principle, be regarded as imperfect in the treatment of diphtheria in future, as advances are made in the use of antitoxin diphtheriticus. Even admitting all that is claimed for antitoxin, I would not advise the discontinuance of the older time-tried remedies, but combine the two when necessary in that class of cases, particularly, where the toxicity of the disease is profoundly marked by staphylococci and streptococci.

Another powerful remedial agent has recently been introduced, and remarkable results have been already attained by its use in the treatment not only of diphtheria, but in scarlet fever and some of the milder classes of eruptive fevers. I refer to nucleinic acid. This agent has the effect of neutralizing or combating the poison diffused by the staphylococci. Its use is also recommended as a tonic, as well as to cope with or prevent the contagiousness of these diseases extending to others who may have come in contact with those already ill.

SYPHILIS.

I quote from the London *Lancet* of June 2-16, 1894, the following extracts:

"The disease is widely spread in all parts of Russia, and in some districts is a veritable scourge. In the Government of Tomsk in Siberia, the immigrant population is said to be decimated by it. The medical department has therefore commissioned three medical experts, Drs. Stepanof, Flitner and Tchapin, to proceed to Tomsk and to take what measures may be necessary to prevent the further spread of the disorder there.

"The attention of the Indian Government has for some time past been called to the large and increasing amount of inefficiency caused by venereal diseases in the European army in India. The question is a very grave one from whatever standpoint it is regarded. Nor are the evils, bad as they are in India, restricted to that country, for the health of our troops in this respect is seriously affected at camps and garrison towns at home and abroad. It must be always borne in mind that the effects of these diseases do not fall exclusively upon the individuals contracting them, but are often extended to other and innocent persons, and some of their remoter consequences are manifested in succeeding generations. So far as the contagious disease acts are concerned, there can not be a doubt that they exercised a deterrent and restraining influence in regard to a number of thoughtless girls exposed to the temptation of urban life, and have brought fallen women within the sphere of moral and remedial influences, to say nothing of the beneficial effects of the acts on the outward aspect and decency of our (their) streets."

ERYSIPELAS, PUERPERAL FEVER AND BRONCHO-PNEUMONIA.

Briefly, I may include that Dr. Marmarek, a Parisian physician, has discovered a *new* serum which he has named "antistreptococcique," for the treatment of those maladies. As this is not quite in the line of prophylaxis, I will omit further discussion of this "toxin" agent except to add that it has been used at the Pasteur Institute in Paris.

CHOLERA.

The destructive agency of the comma bacillus and its media in cholera Asiatica—or cholera nostra, by thoroughly neutralizing its surroundings has been the means of asphyxiating or stamping out through the various countries of Europe this depopulating malady. Whether the disease will start anew in Russia, or the pestilence breed again as a result of the Chinese war, is a thought worth considering at this time. For, during the hot weather months in China it seems as if there is almost always some kind of epidemic prevailing. Should intelligence of this not improbable prophecy be realized and reach America, well may the authorities throughout Europe, as well as here, take thorough and prompt precautionary measures in adopting stringent laws to guard against the spreading of cholera in these countries.

LA GRIPPE.

We read of la grippe intoxication, and the antitoxic effect of certain drugs over this affection. Quinin is a true antitoxin in their treatment, as well as prevention when suitably administered, for in la grippe, or if you prefer to call it influenza, there is a bacillus, and their infective activity is no doubt the cause of this oftentimes distressing malady. As to the sequelæ, these are very numerous: bronchitis, pneumonitis, nephritis, diseases of the nervous system, digestive tracts, etc. I dare not mention more of them at this time, although by your permission I may be pardoned if I very briefly consider one or two of these so-called sequelæ.

My observation in bronchitis, following an attack of la grippe is hygroscopically, when the temperature is lower than it normally should be, or when this condition is combined with moisture, it is most favorable for the development of germs causing the disease. That they become most active, grow, and develop at such periods, I am well satisfied. Condi-

tions exist also to favor this malady so that it may become endemic or epidemic in character due to atmospheric suspension. That the germ may become infectious in its nature I have no reason to doubt, or that the disease may even occasionally be transmitted to, or contracted by one person being in too close contact with another.

PNEUMONITIS.

Regarding the pathology of pneumonitis and the microbe that has been proved to be the almost constant concomitant of this disease, I have but a word to add. The bacillus discovered by Friedlander was thought to be by many the pathogenic organism responsible for exciting it, but the real "pneumococcus" is that discovered by Fraenkel and Talamon and studied by Drs. Sternberg, Weichselbaum and others, later developments of which show that experimentation upon animals with pneumonococcal inoculation will induce inflammatory processes in various tissues and organs.

DEPARTMENT OF PUBLIC HEALTH.

Serumtherapy, including antitoxins, antituberculin, antihydrophoine, etc., are rapidly being introduced. That in their study and their use lies a great future there is no longer a doubt in my mind, when they can be obtained in a perfectly fresh state. When the governments of our municipalities and various commonwealths recognize the importance of bacteriologic research and of State medicine in general, and the establishment of laboratories in various cities of the country, this may be said to be a step in advance of what a few years ago was scarcely worth the thought for a moment's consideration. In a word, then; I believe that in serum-therapeutics and antitoxins, the use of which is almost in their infancy, we have added another boon to humanity and that greater developments await their coming. These discoveries are in line with the researches of Pasteur, Koch and other bacteriologic collaborateurs. In addition to what has just been said, it may be gleaned from the foregoing pages that they point directly to establishing another branch of our federal government, known as the Department of Public Health, with a medical secretary of the same. To my mind there is no longer room for doubt that this proposed additional portfolio should be created. The special committee of the ASSOCIATION first appointed in 1891, to petition Congress to create "a Department and a Secretary of Public Health," submitted the result of its deliberations at the Detroit meeting in 1892 in a most excellent and scholarly manner. At Milwaukee, in 1893, and last year at the San Francisco meeting carefully prepared reports upon this most vital question were submitted, and at all these meetings the report of the committee was unanimously adopted. Your chairman is a very humble member of this special committee, yet he has invoked the promise of several Illinois Representatives and one of its U.S. Senators to coöperate with us to favor the passage of the bill that has been so ably prepared by the committee, and which has been before Congress practically for two years. While the billion-dollar mark for appropriations of the last (LIII) Congress was passed, no small amount of which was for the improvement or deepening the channel of "Mud creek," "Swan lake," etc., nothing was done to promote the health of the American people in the matter of legislation or establishing this greatly desired branch of our government.

That sanitary work can be accomplished and exacted by national authority, of local and municipal boards of health, who do not, or will not at all times comply with that which best subserves the sanitary interests of a community, is a certainty which would require the latter to vouchsafe their stewardship to the people. That well-known maxim, "*Salus populi, suprema est lex*," should have received the thoughtful consideration of every member ere the demise of the last Congress is something which only the ozone of forgetfulness will remove. Permit me to suggest, that we advise and recommend to the ASSOCIATION in general session, ere its final adjournment, that the perpetuity of the committee, clothed with additional substantial authority be continued, and with the request also from this Section that sufficient financial aid from the treasury of the ASSOCIATION be appropriated to defray the necessary expenses of this committee, which should not be less than $1,000 for the ensuing two years.

And now, gentlemen of the Section, you will excuse me, I know, for inviting your attention for a moment to another topic which is not exactly within the province of this address. It is a subject of considerable interest to every member of this Section, if indeed, not to every member of our profession in the United States. I refer to the proposed statue to Dr. Benjamin Rush, to be erected at the capital of the Nation. When we reflect that the beautiful city of Washington is embellished with statues of patriots and presidents, painters and sculptors, generals and jurists, philanthropists and theologians, and numbers of others, all of whom are affectionately commemorated, this much we owe to the memory of that great physician, sanitarian and teacher, a member of the Continental Congress and signer of the Declaration of Independence; when we recall the success that has been achieved by the American Surgical Association, with its hundred members, in raising a sufficient amount of funds for the completion of their monument to Gross, and the prospective erection of a most magnificent monument to Hahnemann in Washington by the homeopaths, it should be a matter of great pride as well as a pressing duty on our part for us to enthuse our members in the matter of the ASSOCIATION monument to Rush. Let it be promulgated from the Section on State Medicine, that we heartily approve this commendable object, and loyally and earnestly and in a substantial manner heartily support the committee having this sacred duty in charge, and with renewed hope going out from this Section of sanitarians, encourage and sustain the committee to invite every member of the ASSOCIATION and the profession throughout the United States to contribute toward this laudable undertaking. That a testimonial in the form of a shaft of marble or granite, surmounted with bronze, enduring as the ages, may be erected eighty-two years after the heroic death of Dr. Rush, to crown his immortal name and perpetuate the memory of one of the grandest and most illustrious members of our profession that America has ever produced, will, I believe, be another historic event of our honorable profession.

In conclusion, I wish to renew my thanks for your indulgence thus far, and say that I am not unmindful of my obligations to you in this respect, and to furthermore state that a very large part of the success the Section on State Medicine has attained this year, is due to the loyal support of the efficient Sec-

retary, Dr. Charles H. Shepard, and to all the members who kindly responded to our invitation to read papers, which you will note by referring to the titles and authors in the program, are of unusual scientific interest.

ORIGINAL ARTICLES.

NOTES ON TWO CASES OF PELVIC SURGERY.

Read in the Section on Obstetrics and Diseases of Women, at the Forty-sixth Annual Meeting of the American Medical Association, at Baltimore, Md., May 7-10, 1895.

BY H. R. HOLMES, M.D.

PORTLAND, ORE.

These cases I report, as throwing some light on the philosophy of ventrofixation:

Case 1.—Mrs. K., age 46, married twenty years; 2-para; youngest child 18 years of age. Seen first in June, 1892. Complained of menorrhagia. Five curettements had been done without much, if any, benefit. Perineum had been attempted by Tait's method which had not given satisfaction. In fact, there was yet a pronounced flatus vaginalis. The first thing I did for the patient was to curette the uterus carefully and pack it with iodoform gauze, and at the same time do an Emmet operation to repair the pelvic floor. The latter was a happy success, in so far as it restored the function of the pelvic floor, but this statement may be questioned, when I admit that it did not raise the uterus as high as its normal place, nor change it from its position in the second degree of retroversion.

Within three months the menorrhagia was bad as ever, and following the menstrual periods there would be a muco-serous discharge so irritating in its character as to abrade the cutaneous surface of the labia and thighs and render the patient hyperesthetic.

Another time I used, I think quite thoroughly, the curette; very little if any improvement took place, and when three months had passed I again curetted somewhat vigorously, and yet no considerable change of the condition was effected. The bimanual examination showed the uterus to be of about normal size and the uterine sound added confidence to this belief.

For more than a year, patient was treated expectantly. In May, 1894, on examining the first time for six months, a tumor the size of a Tangerine orange was found at either side of the uterus, and patient was complaining of constant pain. Within a few days celiotomy was done, and the two cysts, ovarian, were removed, and ventrofixation of the uterus was done also. Convalescence was without remarkable event and my patient improved to an extent, as to say, she underwent a precipitate menopause and not suffering her accustomed waste of blood, began to improve in strength and general appearance.

But still there remained a doggedly persisting uterine discharge—muco-serous in character—which was so irritating to the woman, using her own language, as to render life a misery to her. The irritation, so to speak, was exquisite. It set up a nervous erythism which she felt at times was unbearable.

In November, 1894, I removed the uterus on account of this uterine discharge for which I had tried every other remedy that I could think might be of benefit. On account of the former celiotomy and ventrofixation, I decided to remove the uterus by the suprapubic method, and did a total extirpation. Just before operating, I made a digital examination *per vaginam*, and while the uterus was found to be in good position it was so movable that I supposed it was no longer in any way connected with the abdominal wall. On opening the abdomen, the uterus was found suspended from the abdominal wall by a ligamentous structure about an inch in length by an inch in width, bearing a close resemblance to the natural uterine supports, consisting of two layers between which were the sutures. Recovery, as in the former instance, was perfectly smooth and patient is very well.

Case 2.—Mrs. R., age 39, 2-para. Had secondary syphilis, cyst of broad ligament, lacerated cervix, endometritis, retroversion of uterus and ruptured perineum. As she was a county charge and the officials being highly esteemed for their "political economy," I felt that I should do all I could for her at one sitting, for it was quite certain that she would not again have the chance to enter the hospital for surgical treatment at the county's expense. Accordingly, and as rapidly as possible, and yet it required about an hour and a half, I curetted the uterus, repaired the cervix and perineum, ligated the hemorrhoids after stretching the sphincter ani, opened the abdomen after carefully cleansing the hands, cared for the cyst of the broad ligament and did ventrofixation of the uterus also.

The convalescence was easy; the results were satisfactory.

In the early part of February of this year she visited me at the Portland Free Dispensary to say that she had not menstruated for three months. Examining her, I was convinced that she was pregnant between three and four months. I would like to remark just here that patient had been examined each month at the dispensary and the uterus had been found in good position and movable. I impressed upon her mind the importance of being seen frequently, and accordingly she has come to the clinic every week. About the first of March she had some pain at the point of ventrofixation. This troubled her but slightly for three weeks and ended. She seems to be passing along through her gestation naturally. I think she is pregnant about six and a half months, and have hopes that she may go on to full term smoothly. We are keeping her on 10-grain doses of potassium iodid three times daily.

In conclusion, I feel like stating that I have never been better pleased with the results of any of my gynecologic operations than those of ventrofixation. I believe that it is just as valuable for extreme anterior displacements as for the posterior variety; yet it might not be appropriate to do it more than once perhaps for the former while it is being done twenty times or more for the latter, for the reason that cases demanding it for anteversion or anteflexion are relatively so infrequent as compared to those demanding it for posterior displacements. In other words, cases of extreme anterior displacement are rare.

I now know of three prominent and highly qualified surgeons who have employed this means of suspending extremely anteverted and anteflexed uteri, during the past year, and they have reported satisfactory results.

Last year at San Francisco, I read a paper before this Section on ventrofixation for extreme anterior displacements of the uterus, reporting six cases so operated on with pleasing results. Since that time I have met with but one case of the kind sufficiently bad to require the operation, while during the year I have suspended the uterus perhaps a dozen times for retroversion. To be sure, retroversion is usually accompanied with some degree of decensus, which is the cause in part at least, of the attending symptoms, but I am not convinced that anterior displacements do not cause bladder and menstrual disturbances equally great in rare but occasional cases.

When I read my paper in San Francisco I was as well as now aware of the popular professional opinion regarding the clinical import of anteversion and anteflexion, and yet, results of the few operations that I reported were so satisfactory, as well as encouraging reports from others who have done the operation, that I am still under the persuasion that the procedure is one of value. While it is so absolutely safe, barring the possibility of accident or error, I presume its justifiability will hinge upon the question, Is there such a thing as pathologic ante-displacement of sufficient consequence to merit attention or treatment? If so, the operation which I have proposed deserves your consideration and trial; if not, I am laboring

under a mistake; a part of Dr. J. Marion Sims' valuable time was wasted, and Dr. Dudley, of Chicago, has perpetrated a joke upon himself.

If it be not asking too great a favor, I should be glad if those who believe in the existing importance of ante-displacements, would give this simple and safe operation a single trial.

While the immediate effect of the procedure suggests the term, ventrofixation, in view of that which takes place secondarily, I am willing to accept the name which Professor Kelly now is using as a better one, and certainly he has the right to christen his own child.

DISCUSSION.

Dr. A. Lapthorn Smith, of Montreal—said he was very much indebted to Dr. Kelly for this operation, which he has now performed twenty-six times without any mortality rate and with very gratifying results. He referred to the importance of scarifying the peritoneum and anterior surface of the uterus for the purpose of favoring adhesion. He employs a permanent sterilized silk ligature in stitching the uterus to the abdominal wall. The organ is quite movable after the operation. He considers it preferable to Alexander's operation. He had done the Alexander operation twenty-six times before he began this method.

Dr. Reuben Peterson, of Grand Rapids—said the first operation that he attempted for suspension of the uterus by the ovarian ligament was devised by Dr. Kelly. Dr. Kelly was fortunate in getting a large number of cases upon which the operation could be done, and we must depend upon the record and the results of a large number of cases in order to determine the special method we shall adopt. In seventeen cases he has suspended the uterus by means of the ovarian ligament. Recently he had the opportunity of examining ten of the patients personally, and had a report of five others. In ten of the cases the anatomic result was perfect, and a cure has been effected in fifteen out of the seventeen cases.

Dr. Rufus B. Hall, of Cincinnati—thanked Dr. Kelly for his excellent work in this direction, and said he had made the operation a number of times and was very much pleased with it. He mentioned the fact that in a number of cases in which one ovary was removed and the uterus fixed to the anterior abdominal wall, the patients had borne children without inconvenience. One patient complained of considerable pain in the line of incision about the fifth or sixth month, after which she went along and was delivered without trouble. He is more and more convinced that time will prove that retroversion will be treated in this manner as a routine mode of treatment.

Dr. J. Henry Carstens, of Detroit—said that ordinary cases of retroversion of the uterus without any adhesions did not require ventral fixation. He believes that such cases can be treated by mechanical means. Some of these women do not complain of any symptoms whatever, while in other cases more or less pain and distress are complained of. He finds also in these cases of retroversion of the uterus that a diseased tube is generally at the bottom of the whole trouble, and as a result we have on one side the tube, ovary, uterus, and rectum matted together. In such cases we have to perform abdominal section and remove both the diseased ovary and tube. When we do that and break up the adhesions between the uterus and rectum, we may as well stitch the stump in the lower angle of the wound and keep the uterus anchored *in situ*, while the other side being perfectly healthy will go on and functionate and the woman may become pregnant. He claimed that all cases requiring ventral fixation are due to a diseased tube and ovary, and they must be removed in order to do any good. He was perfectly astonished in the light of modern surgery to hear that Dr. Kelly still employed silk for ligatures in these cases, and thought it would be better to employ some absorbable material for that purpose.

Dr. Beverly MacMonagle, of San Francisco—has performed the operation a number of times with excellent results. With regard to scarifying the tissues, he does not think this is necessary if the sutures are passed as recommended by Dr. Kelly. The whole intra-abdominal pressure is on the back of the uterus, and while the tissue allows it to sink down it does not permit the abdominal viscera to come between the uterus and abdominal wall. He has had quite a number of patients who have declined the operation. The operation of vaginal fixation is coming forward and being practiced by a neighbor of his very generally, and he was anxious to hear the different opinions on this subject.

Dr. M. B. Ward, of Topeka, Kan.—felt certain that there was no operation in surgery that is equal in its results to the one described by Dr. Kelly. He does not agree with Dr. Carstens as regards the benefit of mechanical treatment in these cases. A gynecologist might treat a uterus for six years by trying to replace it by mechanical methods, and yet eventually would be forced to do this operation in order to effect a cure, and if Dr. Carstens could replace a uterus in these cases by manipulation with tampons and pessaries, he was more skillful than the speaker. He had had excellent results in cases of ventrofixation.

Dr. G. R. Feil, of Cleveland, Ohio—referred to a case in which fatal secondary hemorrhage followed the performance of the operation. The patient was a woman, 33 years of age, upon whom a double ovariotomy had been performed. The uterus was retroflexed, and the physician in charge performed the operation as recommended by Dr. Kelly.

Dr. X. O. Werder, of Pittsburg—was sorry that vaginal fixation was not more discussed than it had been. He saw Dr. Kelly do his operation of suspensio-uteri two years ago, and was well pleased with the method and had been using it until seven or eight months ago. He had operated twenty-five times by Dr. Kelly's method and his results had been very good until he encountered mural abscesses. Shortly after this he noticed that German operators were recommending vaginal fixation. He has resorted to this method in thirteen cases. One advantage of vaginal fixation over the abdominal method is the avoidance of the abdominal incision, and he knows from experience that with many patients this is an important matter. Many patients will submit to vaginal fixation in connection with a cervix operation, Emmet's perineal operation, or some plastic operation about the vagina when they will flatly refuse to have the abdomen opened for correcting a malposition of the uterus. Another advantage of vaginal fixation is that patients can leave bed in ten days. After the operation they do not complain of any pain, thirst, or any of the disagreeable symptoms that are frequently complained of after an abdominal section.

CONCERNING THE PRINCIPLES AND PRACTICE OF EPISIOTOMY.

Read in the Section on Obstetrics and Diseases of Women at the Forty-sixth Annual Meeting of the American Medical Association, at Baltimore, Md., May 7-10, 1895.

BY FRANK A. STAHL, M.D.

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Nature teaches that she endeavors to establish a favorable relativity in size, axes and diameters between those of the mother and her parts, especially the pelvis, and those of the fetus and its parts. Where this is, there is the normal. When this favorable relativity is present and with long fetal part diameter to long pelvic diameter given the proper parturient power, there will be natural, unassisted or normal labor, without destruction or harmful adaptation of part to part; where otherwise, as long fetal part diameter to a shorter pelvic diameter there will be unnatural or abnormal labor, requiring corrective assistance either natural or artificial, be it at the superior strait, in the cavity or at the outlet; be it upon the mother's part or upon the fetus' parts, and as a result of such deviation, necessity has invented operations, such as the forceps, turning, Cæsarean section, embryotomy, and yielding for a moment to the symphyophile, symphysiotomy. At the outlet, nature teaches episiotomy. At the outlet, the longest diameter is the antero-posterior, and to it must be apposed, and through it must pass the longest diameter of the fetal part, and this is usually the case. Unfortunately the antero-posterior diameters of the osseous and soft pelvic outlets are not equal in length, that of the soft outlet being shorter, so that often a fetal part will readily clear the osseous outlet, but

not so the soft outlet, and then with difficulty and traumatism.

Nature endeavors to overcome this difficulty and disproportion between fetal part and soft outlet by dilatation of the soft parts to encourage increase of their diameters and circumference; but where dilatation does not affect this favorable relativity, nature does so by establishing the equality of diameters through separation of the parts of the soft outlet, thus overcoming the disproportion. In the great majority of all cases where this natural separation occurs, be the case normal or abnormal, it does so in the midline through the perineum, a natural episiotomy, as it were, and central in character, though in some few cases the separation deflects to one side or the other. In this phenomenon there is an expression of a law of nature. When and where she finds it necessary to overcome an obstacle, nature chooses that direction and that method in which there is the least resistance, the least injury inflicted, the least expenditure of energy, and in which the necessary therefore the most good is accomplished. Though this assisting corrective principle of nature at the soft outlet is an old one and must have been appreciated by many before him, to Fielding Ould (1742) is given the credit of being first to call attention to this subject. He seems to have adopted nature's plan, suggesting central episiotomy. The records are not clear whether or not he performed episiotomy. Michaelis (1799) is accredited with having been the first to have performed the operation, and he, like Ould, advocated episiotomy in the midline. In 1836 Ritgen suggested scarification of the outlet, but this theory is lacking in efficacy, as well as in principle. In 1850, Eichelberg, and in 1852, Scanzoni brought out and recommended lateral episiotomy, the method as generally practiced to-day, lateral incisions from 1 to 3 cm. in length. More recently Cohen suggested subcutaneous myotomy of the sphincter cunni, a suggestion failing again in efficacy and principle. It savors much of a congenial library and a fragrant Habana. Its to have been anticipated impracticability quickly proved itself when attempted at the bedside. Since Ould's time more or less interest has been shown in episiotomy, yet more interest than practice; its principle has always been regarded with favor, not so the method.

In America renewed interest seems to have been awakened in episiotomy, following the appearance in 1878 of Dr. Anna Bromall's most excellent and exhaustive article which was soon followed by those of Credé and Colpe, Manton, Wilcox, and many others in close succession, one of the last to appear being by Dickinson, well illustrating his conception of the principles and the technique to be followed in lateral episiotomy. They, like our text-books, favored the lateral method and the consensus of opinion to-day is to favor the lateral method. The success with the lateral method has been such that although the writers above referred to have all warmly recommended lateral episiotomy, the success or perhaps the lack of success which this lateral method has met with in the hands of the general, as well as special practitioner of obstetrics, has been and still is such that opinion at the present time is less enthusiastic toward the operation than formerly, many discarding it altogether as without virtue or value. This feeling is quite plainly reflected in the words of Professor Parvin who, in reference to this operation, concludes as follows: "It may be stated that episiotomy will very seldom be plainly indicated, and in private practice will rarely be done." Very similar in tone writes Professor Lusk: "It (episiotomy) is essentially the operation of young practitioners, the occasions for its employment diminish in frequency with increase of experience," and further, Chailly-Honoré, the most enthusiastic advocate of lateral episiotomy (Bromall), refers to it "as the excellent practice of Professor Dubois, who taught that incisions should be made, extend in an oblique method, not to exceed 2 cm. He admitted, however, that perineal ruptures can not always be avoided, etc.," an expression very clearly showing his doubt in its efficacy and that nature often assists post operationem.

Though, comparatively speaking, yet a younger practitioner, I have enjoyed a preliminary training in obstetrics granted to but few, and since then my experience in the obstetrical field has been rich in material, and yet richer in instruction, since this preliminary training enables me to properly appreciate each and every case as it occurs.

Episiotomy, I believe, meets with so little kindness not because episiotomy *per se* is at fault, but rather it is the method in which opinion dictates it should be performed. Opinion has misled, and instructs to adopt the lateral method. On the other hand, nature remonstrates and requests to elongate in the midline. It is opinion that has endeavored to misdirect, but nature, like truth, will assert herself. Still, I can readily agree with these gentlemen in their adverse conclusions, but only in so far as their remarks apply to lateral episiotomy, because lateral episiotomy is wrong in principle and lacking in efficacy. This is not so with nature's method, central episiotomy, which in principle, I believe, is correct, and that is to elongate and increase the circumference in the direction of the essential diameter of the soft outlet, the antero-posterior, thus equalizing the diameters of the soft and osseous outlets and establishing the natural favorable relativity.

Lateral episiotomy does not accomplish this. At the outlet it is to and through this shorter a. p. soft outlet diameter that the longest diameter of the fetal part must pass, therefore if dilatation be not sufficient and inequality of diameter exists, correction in this diameter becomes a necessity and occurs; observation teaches this, so does nature, and central episiotomy thus becomes the natural method. In my humble opinion at the present time there is no subject before obstetrical thought which attaches greater importance to itself than does this matter of episiotomy.

Society, as the accoucheur finds it to-day, has a tendency to gather in the cities, crowding itself within very narrow lines, and where formerly the mode of life was such that there was room and plenty of it to live and move in, there is now, and this tendency is growing, scarcely space in many quarters to breathe in, not to say anything of properly exercising in. This overcrowding and confinement are gradually having their effect upon the body of the species. The physical under these unfavorable conditions is certainly not gaining, nor even in many instances holding its own. As a consequence there is a loss of power, of strength, to overcome the resistances nature requires the physical to overcome. Statistical research and scientific inquiry will prove this to be true, and in all branches of medicine, namely, medi-

cine, surgery and obstetrics. I feel quite sure that there is not an accoucheur of experience present but who indorses the point made by Duncan as to the disproportion between fetal part and soft pelvic outlet. Duncan writes as follows: "That in the Darwinian progress of the head of the species, the head of the fetus has increased in size more rapidly than the orifices and passages, through which it has come, have increased in size and dilatability." As man's tendency to gather in large bodies in small places continues, so will loss of the physical continue until better hygienic conditions obtain, and so will this disproportion between outlet and fetal part continue, and therefore will continue the necessity for some corrective assisting means to successfully overcome this unfavorable relativity of outlet and fetal part, or we must leave it to nature to correct. It is in consequence of this light, this experience, that I find I can not agree wholly in opinion with our masters of obstetrical thought, Professors Parvin and Lusk. Experience has taught me to adopt episiotomy, and then central, never lateral, where the disproportion between fetal part and soft outlet is plainly evident; this in an experienced sense.

In my hands, episiotomy is an instrument, *par excellence*, aiding as no other instrument can in the preservation of life and body, both in the fetal and maternal, and as I grow in obstetrics and since I find that the disproportion does not decrease, I am glad to know that there is so effectual and yet simple an instrument as central episiotomy at my command. It is in private practice especially where it has proved itself of such benefit, and has often assisted me in saving the life of the fetus and always in preserving the perineal body and other parts of the soft outlet.

In nearly all cases of accouchement forcé, as turnings, high and low forceps in the primiparæ and well-preserved pluriparæ, and in something like 20 per cent. of so-called normal deliveries this disproportion between fetal part and soft outlet exists. Especially in turnings in the primiparæ has episiotomy been of great value to me. Formerly in the after extractions, I found the greatest difficulty in dragging the fetus through the undilated vagina and outlet, greater difficulty indeed than in the intra-uterine turning itself. Even before the turning, in some cases, the power of the arm becomes neutralized because of the intense contraction of the undilated outlet and vagina about the forearm; and often because of this constriction, delivery was not accomplished until vagina and outlet were forcibly ripped apart from the disproportion between fetus and outlet and in the hurry to save life. Now with episiotomy, turning and extraction are far easier than formerly, with greater comfort and less danger to all three concerned—fetus, mother and accoucheur. The same in principle applies to high forceps and in a modified way to low forceps.

Of the four methods—lateral, central, scarification and subcutaneous myotomy, suggested to favor the establishing of the favorable relativity of longest fetal part diameter and longest pelvic outlet diameter and increase of outlet circumference, lateral and central episiotomy only are worthy of consideration. Lateral episiotomy is lacking in two cardinal points: 1, it is wrong in principle; and 2, the operation as recommended is sadly deficient in efficacy, and besides it is unnatural. To establish the favorable relativity, the essential diameter, the soft antero-posterior must be equalized. Lateral episiotomy, as practiced, does not accomplish this; on the contrary, it elongates the transverse and oblique diameters and remains almost neutral toward the all-important diameter, the antero-posterior, therefore this ill success. My experience with lateral episiotomy has been, I believe, much that of others. In those cases where it seemed to have been of service, legitimate doubt subsequently arose as to whether or not the fetal part could not have passed without lateral incisions. But in those cases where the disproportion was plainly evident, as in nearly all cases of accouchement forcé, as in high forceps and turnings where though lateral incisions were made, observation decided that invariably nature assisted with central episiotomy. And why? As taught, lateral episiotomy is made with reference to length of incision from 1–3 cm. in a lateral direction. Scarcely any mention whatever is made of depth (a depth of a line or 5 m.m. is practically without effect). As stated, this will elongate the transverse and oblique diameters—diameters that need no corrective assistance. Unless lateral episiotomy be made with reference *primarily to depth of incision that the interval between the incisions may fall back as a tongue of perineal tissue, lateral episiotomy is absolutely without effect upon the essential antero-posterior diameter.* But such a practice compared to central episiotomy is excessive, requires greater efforts to perform and to restore, is more dangerous and requires a longer road to arrive at an inferior result.

One of the best physical explanations offered me in support of this lateral method is the so-called theory of the "parallelogram of pelvic outlet forces"; and is, so I understand it, as follows: The head, as it rides upon and over the perineum and through the parallelogram, as formed by the labiæ, does so in a manner like the segment of a sphere whose diameters are equal in all directions. As a segment of a sphere its greatest power would be exerted at its central axial point, diminishing in a radial manner from the central point. The parallelogram not being continuous, resistance is not met with or power expended at this central axial point, but in a circumferential and radial manner, thus receiving and expending the greatest resistance and power in a radial manner, therefore lateral or radial incisions.

This theory is weak in several respects:

1. The head does not descend upon the soft outlet, so that it acts as a segment of a sphere, nor are its diameters equal in all directions. It may appear so between the labiæ, but the head in its passage over and through the soft outlet acts upon it as a segment of an ovoid whose longest diameter is in the antero-posterior, and to be favorably related to the pelvic outlet must assume and clear that outlet in its longest diameter, its antero-posterior.

2. Radial incisions are wrong in principle, since they increase the circumference, but superficially, and then so as to increase the non-essential transverse and oblique diameters. To be of service, increase of circumference of soft outlet should not be superficial only and must be made so as to increase the antero-posterior diameter.

3. Radial incisions as implied above, regardless of *number* and *length* are without the essential corrective effect, unless made with regard primarily to *depth*. Such a practice compared to the single simple non-dangerous midline incision is seriously objectionable.

4. Nature herself disproves this theory since often, notwithstanding lateral incisions, she corrects even the artificer and separates in the midline, and not seldom exaggerates the lateral incisions both in length and depth; again in the fact that in the great majority of all spontaneous lacerations they are central in incipiency and character; also in the fact that where rupture of the perineum solely occurs it is central, never lateral.

5. This theory is not applicable to other forms of labor than occipito-anterior, as in those of occipito-posterior, face and pelvic presentations, where the circumference of the advancing part is oval.

The floor of the pelvis is divided throughout nearly its whole extent by two outlets. In outline these outlets may be compared to a flattened unequally looped figure of eight. The anterior and greater loop ovoidal in outline corresponds to the parturient canal outlet; the posterior, smaller and more circular corresponds to the alimentary canal outlet and as connecting link between the two loops and encroaching upon the caliber of both canals is the triangular perineum. If the circumference of either loop be too small to permit a body to pass, and especially an ovoidal body through the ovoidal loop, the most simple and effectual way to increase that circumference is to overcome the uniting encroaching link, and this will be in a line with its central diameter. In the case of the ovoidal body passing through the ovoidal loop, the greatest resistance will be at the central point of the circumference of the invading link, diminishing in a radial manner from this point.

Separation of the soft perineal link in the midline increases the superficial and deep circumference of the parturient outlet and in a direction equalizing the essential osseous and soft pelvic outlet diameters, with less expenditure of energy to perform and to restore, with less danger to body and life, and is more practicable than in any other method.

So far as technique is concerned, I have nothing to add what is already so well known; all that is required is a pair of blunt-pointed scissors. In high forceps and turnings in the primiparæ and the well-preserved pluriparæ where the fetal parts have to be dragged through an undilated vagina and outlet, where disproportion between fetal part and outlet is always considerable, before applying the blades or attempting to turn, I stretch the undilated perineum between two fingers and sever in the midline through the whole perineal body, through vaginal, parenchymal and dermal parts, as far as necessary even to the sphincter ani, stop hemorrhage where any, then apply or turn. In low forceps or normal labor I sever, as recommended by B. Schultze, only then when "the commissure shows signs of yielding," following in both cases with immediate post-partum perineorrhaphy.

THE THERAPEUTIC ACTION OF CHLOROFORM IN PARTURITION.

Read in the Section on Obstetrics and Diseases of Women at the Forty-sixth Annual Meeting of the American Medical Association at Baltimore, Md., May 7-10, 1895.

BY BEDFORD BROWN, M.D.

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The results of chloroform anesthesia in parturition constitute one of the most remarkable and interesting features in the history of medicine. During the past thirty-five years there have doubtless been millions of cases of parturition in which the agency of chloroform as an anesthetic has been called into requisition in the civilized world with the rarest report of fatal consequences.

Then too, when we take into consideration the manner in which chloroform is given in labor, often recklessly, carelessly, and copiously, we are still further astonished at the almost universally favorable results. Often administered by ignorant nurses, husbands, bystanders, even by the patients themselves, and not infrequently, recklessly and injudiciously by the attending physicians, it is wonderful that evil results are so rare. Thus chloroform is used in a manner in parturition that no surgeon would dare to do in performing an operation.

The profession has come to regard the use of chloroform in parturition as almost utterly devoid of danger, and it is this opinion based upon substantial facts that has given rise to its universal and careless, even reckless administration in labor. Why chloroform acts differently in the parturient and pregnant female from the non-pregnant person, or why it is comparatively harmless in the pregnant and is attended with a certain degree of danger in the non-pregnant is a question not devoid of interest or importance. To be enabled to determine what there is in the physiology of pregnancy that protects the woman against the dangers of chloroform would be to ascertain and establish a fact in the therapeusis of chloroform that would shed an infinite amount of light on its therapeutic action not only in labor, but from a surgical point of view.

During the process of pregnancy there are two systems which undergo manifest changes of a developmental order. These are the vasomotor and circulatory systems.

The developmental changes in these two systems are of a phenomenal character. The muscular structure of the left ventricle takes on increased nutrition and growth, that it may have increased force and power to meet the new emergencies of circulation and nutrition. A new being is to be nourished, developed, formed, and shaped in all its parts, and to do this a new force is to be created. The heart of the pregnant female not only acquires additional force, but the great vasomotor and sympathetic systems, with their ganglia and nerves take on new energy, more vigorous action and power to maintain that complex circulation of both mother, the placenta and fetus. Just in proportion as the growth of the placenta and fetus increase, these developmental changes in the circulatory vasomotor systems advance. Otherwise the pregnant woman would utterly fail to sustain her own strength and health, and at the same time nourish the placenta and fetus. Hence her vasomotor system and circulation reach a state of development in point of vigor, energy and power rarely attained in any human constitution.

Under these circumstances, arterial tension and blood pressure more than redoubled are indicated in the strong, vigorous, bounding and frequent pulse of the pregnant woman, which is familiar to all practical obstetricians. Such a state of arterial tension and blood pressure would be regarded in the non-pregnant as indicating a dangerous degree of plethora and congestive tendency. But in the pregnant woman we know there is a safety valve, a diverticulum for this increased circulatory force and volume found in the placental and fetal circulations.

Among the most interesting developmental processes of pregnancy is leucocytosis, a purely regenerative and restorative process. This seems to be the foundation upon which is constructed all other developmental functions of the vasomotor and circulatory systems, to enable them to bear the new duties and superadded labors of the emergencies of pregnancy and parturition. To what extent the immunity of the parturient female from the toxic action of chloroform is due to the restorative and sustaining process of leucocytosis can not be determined at present.

The process of pregnancy, the evolution and growth of the fetus require that every energy of the maternal system shall be bent singly to the accomplishment of those objects.

That the therapeutic action of chloroform in the parturient female differs widely from that in the non-pregnant person, there is abundant evidence to prove. We know that in surgical practice, chloroform anesthesia is attended with a certain proportion of mortality that renders extreme caution necessary, while a death or even unpleasant result in labor is a very rare occurrence from that cause.

In the obstetrical practice of the civilized world, the most careful researches have only brought to light a very small number of cases of death in the millions of instances where chloroform is resorted to.

We may safely say that in the practice of the world there are twenty cases of parturition in which chloroform is resorted to, to one of surgery, and yet there is not the one-hundredth part of cases of mortality in the former as the latter. I do not think that this is an exaggerated statement. The most careful investigation has failed to find more than forty deaths from chloroform in labor, in the practice of the world, from the time that this anesthetic was brought into use to the present time. Some high authorities place the number at only three deaths. This is, I think, a wonderful exhibition, particularly when we take into consideration the careless, unscientific, reckless manner in which it is given during labor.

And not only this, but its often prolonged use during protracted labors. I have seen it given in protracted labors every half hour for twelve, and in certain cases for twenty-four hours, where there were not only no evil results, but labor terminated naturally and favorably. I have seen in cases of obstetrical operations the patient kept in a profound state of chloroform anesthesia for two and three hours without the least indication of collapse of the circulation or suspension of respiration.

In a long experience in the use of chloroform, extending over a period of nearly forty years, I have yet to see my first case of the least evil result to mother or child. Yet I am opposed to its reckless and careless use in parturition and for fear that there might be an evil result, believe that the same scientific principles and careful method of giving it should guide us as in general surgery.

According to these statements, and I am convinced that they are sustained by the experience of the majority of the profession, pregnancy, particularly during the stage of parturition, does in a large degree render the woman immune from the evil effects of chloroform. This having been established as a fact in its therapeusis, it remains to be determined what is there in the state of pregnancy or parturition that gives the parturient patient this immunity.

The extraordinary development of the vasomotor and circulatory systems in the pregnant woman has been alluded to, with its wonderful arterial tension and high blood pressure. The pulse even of the most delicate pregnant woman is often as hard, full and strong as the most robust man. In a paper read last November before the Southern Surgical and Gynecological Association, on the action of chloroform on the exposed human brain, I showed very conclusively that the anesthetic action of chloroform on that organ was invariably to produce anemia of its circulation, reduction of arterial tension and diminution of blood pressure, so that always under full anesthesia the brain becomes anemic to a degree that in extreme cases there is an enormous and dangerous reduction of circulation preceding general collapse. I am therefore constrained to believe that in this wonderful development of force, strength and power of the pregnant woman in her vasomotor system lies her immunity from the toxic action of chloroform. Every degree acquired of additional strength in the vasomotor system gives her increased immunity. It is this newly acquired force of the vasomotor system of the pregnant woman which enables her to resist the toxic action of chloroform to an extraordinary extent, which prevents extreme depression of arterial tension, and consequently excessive and dangerous anemia of the brain and spinal cord.

In the cases alluded to, of extensive injury of the cranium and the brain in which, while chloroform was being used, I had a perfect ocular demonstration of its action on the functions of the brain during its administration of three or four times in each case, reduction of arterial tension, blood pressure and vasomotor force in the arteries invariably preceded a state of anemia of the brain, and this extreme anemia of the brain, suspension of pulsation and hemorrhage always preceded tendency to general collapse.

These facts, I think, indicate to us very clearly that in chloroform anesthesia, anemia of the brain to an extreme degree always precedes dangerous chloroform narcosis and collapse, and, at the same time, that so long as the vasomotor force remains intact in sufficient force to sustain the circulation in the brain and medulla, life will be sustained.

In my experiments with chloroform in the cases cited of injury of the brain, there were two occasions in one, and one occasion in the other, on which there was alarming collapse, with almost entire suspension of respiration and cardiac action. Preceding these symptoms in every instance there was marked reduction of vasomotor force, arterial tension and blood pressure, and diminution of cardiac power. In all my experience in the use of chloroform in parturition, I have never witnessed this extreme reduction of cardiac and vasomotor force, no matter to what extent the agent was pushed, that I have in general surgery.

The primary action of chloroform is on the cortex of the brain, the seat of consciousness and sensation. For the relief of the pains of parturition, all we have to do is to bring the cortex under a state of anesthesia, without extending its influence so far as to involve the reflex functions of the cord. This is equally true of anesthesia of general surgery. By watching the action of the remedy we are enabled to confine its influence to the cortex without infringing on the functions of the cord or vasomotor system. This is all that is desired to relieve pain and to render the

act of labor more comfortable and easy for our patient. On the contrary, if we desire to relax excessive rigidity of the soft parts, or in case of convulsive action, to control that, we must extend our anesthetic influence further, and bring under its power the reflex functions of the cord itself. So long as we confine our anesthetic to the cortex alone we can not accomplish these objects. But immediately the cord is brought under its influence, complete muscular relaxation follows.

We will now consider the question of anesthesia in its practical bearing and influence on the process of parturition.

Is the use of chloroform in parturition justifiable for the relief of pain alone?

This is the first question that presents itself for our consideration. I believe that it is, but not in every case. For instance, there are cases where the pains are slight, the conditions all favorable, the passages spacious, the labor rapid, in which it is unnecessary. But in every case where the labor is at all slow, painful, and not easy, I believe that it is not only justifiable, but that it would be inhuman to withhold it. This statement is based upon the fact that the mor tality from chloroform anesthesia in labor is so very small, not probably amounting to one in millions, we certainly can risk so little for so much good.

I know that there are those who oppose its use in parturition *in toto*, but I believe without good and just reasons.

Pain is the great terror of parturition and if it could be robbed of this feature alone it would be converted into a very simple and easy process. For some years before I adopted anesthesia in my obstetrical practice, I have time and again sat by the bedside of women in the throes of parturition and listened often with anguish to myself, to their cries for relief from pain, heard their moanings from almost insufferable agony, for hours of such scenes that impressed themselves upon my memory in a manner never to be forgotten. With chloroform at hand, and with my familiarity with its action, I never have to pass through such painful scenes now. I have tried in past years many substitutes for chloroform to relieve the pain of parturition, but have never found one yet. I am convinced that it is *the anesthetic* of all others peculiarly appropriate to the parturient state. It is clean in its action, does not cause congestion of either the brain, the lungs or kidneys, but markedly diminishes the tendency to congestion of the brain.

Does the action of chloroform facilitate the process of parturition?

I believe that, as a rule, it does. I am convinced that in a great majority of cases it does shorten the duration of parturition. I know that it is the opinion of some that its action is to reduce the strength of uterine contraction and in this way retard the process of parturition. It has been my experience that while it relieves pain, its use may be so graduated as to not impair uterine contraction. Acting on the cortex of the brain alone and on the reflex functions of the cord are two different things. Thus we can abolish sensation without affecting reflex action. I believe that with care and judgment we can confine the action of chloroform to the cortex alone, the seat of sensation, and leave intact the reflex functions and the contractive force of the uterus.

I have no statistics to guide me in this matter, but my personal experience in the administration of chloroform in parturition leads me to believe that it not only makes labor easier, but that in the average it shortens the duration of that process. If then, it is capable of rendering labor easier, more bearable to the patient, and can shorten its duration one hour, or even thirty minutes, its application is justifiable when we consider the very small risk incurred in giving it. In certain conditions I know that it can shorten the duration of labor. These conditions are rigidity of the soft parts, and irregular contraction of the uterine muscular fibers or spasmodic contraction of certain sets of fibers and relaxation of other sets; a condition that may protract labor indefinitely. The spasmodic contraction of certain muscular fibers of the uterus and relaxation of others is not an unfrequent state during protracted labor, and is a similar condition to that which produces the hour-glass contraction after labor. Chloroform is capable of equalizing uterine contraction and of preventing irregular spasmodic contraction, and in this way facilitating parturition.

Its well-known power to overcome and relax muscular rigidity no one can doubt. In illustration of this fact, I have repeatedly in my experience seen cases attended with rigidity of the soft parts where the process of labor was stationary, it might be for an hour or more, or even hours, but when chloroform was given in such quantities as to produce muscular relaxation, the labor would progress rapidly toward a termination.

At what stages of parturition is chloroform applicable?

To relieve excessive pain it is applicable at any stage. But to induce relaxation of muscular rigidity it is applicable in unusual rigidity of the os uteri, and in extreme rigidity of the perineum when the fetal head begins to press on that body. When the object of giving chloroform is to relieve pain only, it should be given in small quantities at the beginning of each pain and left off when the pain ceases. But when we desire to overcome muscular rigidity the patient must be subjected fully to its influence. In the case of extreme contraction of the os uteri, or great rigidity of the tissues of the pelvic floor, no half way procedure will accomplish anything. The patient then must be brought sufficiently under its influence to at least partially suspend reflex action when complete muscular relaxation follows, just as we would do in reducing a dislocation.

When there is perfect accommodation between uterine force and muscular relaxation in a normal pelvis, labor proceeds rapidly, easily and successfully. On the contrary, when this accommodation is disturbed, when, for instance, uterine contractile force is feeble, and perineal muscular tension is excessive, labor proceeds slowly and painfully. The action of chloroform in this class of cases is to bring this accommodation between uterine force and pelvic resistance to a more normal standard by reducing muscular tension. Leaving out of question congenital defects, or those caused by disease in the pelvic bones, the vast majority of tedious and difficult labor will be found to be due to rigidity of the muscular structures of the pelvis, or inefficiency of uterine contraction. We often see these conditions existing together. Nineteen out of twenty cases of instrumental delivery, in my personal experience, have been due to excessive muscular rigidity of perineum. In these particular cases the action of chloroform has

been to cause perineal relaxation, to reduce muscular resistance, to bring about accommodation between force and resistance without materially impairing that force on the part of the uterus.

Does chloroform tend to suspend uterine contraction?

There can be no doubt that chloroform may be given in labor in a manner either to relieve pain and to leave uterine contractile force intact, or to both suppress pain and uterine rhythmic contraction so as to suspend parturition for a time.

Rhythmic uterine contraction is an essentially reflex function and we know that the different nervous functions come under the influence of chloroform in consecutive order—sensation first, then reflex action and finally vasomotor action. Because of this fact we can, as a rule, relieve the pains of labor without impairing the force of uterine contraction. All practical obstetricians have observed in patients in labor when under chloroform, entire relief from pain while, at the same time, the rhythmic contractions of the uterus, and all the symptoms of active tenesmus were in full operation. I believe that this is the ideal state of chloroform anesthesia, in labor, and I am convinced that it may be so administered always as to relieve pain and leave the reflex functions unimpaired. Again, I believe that the reflex functions of the parturient patient are far more resistant to the toxic action of chloroform than in ordinary cases, and that it is more difficult to suspend them. This fact gives us a decided advantage in giving chloroform in labor, simply to relieve pain without interrupting the progress of parturition.

In my experience it has been seen that when the uterine contractions have been for the time suspended by the too free use of chloroform, when this influence subsided, uterine contractile force returned with renewed and additional vigor to perform the work to be accomplished. Also there have been occasions in tedious cases of labor, when the pains were irregular and insufficient in character, causing much needless suffering to the patient, that when the patient was placed under full chloroform narcosis for a time and was made to enjoy a prolonged sleep, the pains were renewed with vigor and force sufficient to terminate the labor.

Does the action of chloroform tend to promote or prevent post-partum hemorrhage?

This constitutes one of the most important questions connected with the therapeutic action of chloroform in parturition. If it tends to promote hemorrhage then this fact increases the dangers of its use in this condition. From my personal experience I can say this much relative to this question. Many times after its administration in parturition, when pushed to the extent of causing entire unconsciousness at the time of birth, in not a single case have I observed a greater tendency to hemorrhage or any greater difficulty in producing firm uterine contraction than when it was not used.

So far as this question is concerned, I can speak alone from personal experience, and any personal experience in a large number of cases extending over a long term of years, is of some value in settling important questions. High authority on the action of chloroform on the circulation is that it is a vasomotor contractor. In my surgical practice its action on the vessels rather tended to establish this view. Profound chloroform anesthesia certainly does diminish surgical hemorrhage. In my cases of injury of the skull and brain, under chloroform anesthesia there was a marked diminution of cerebral hemorrhage in every instance. Then if it be true that chloroform is a vasomotor contractor, this, it appears to me, would decide this important question.

Does the action of chloroform in parturition tend to prevent or promote laceration of the os uteri or perineum?

Are lacerations more common under the present method of delivery under anesthesia, or under the old system of delivery without anesthetics? I have no reliable statistical data bearing on this subject to guide me, but I will state here that I have practiced under both the old system and the new, and am enabled to state positively that all of the bad cases of laceration of os uteri and perineum have occurred in cases where chloroform was not given. Many of the worst cases of laceration of these organs occurred in cases of rapid birth before my arrival. I am decidedly of opinion that thorough relaxation of the structures of the pelvic floor constitutes the best security against injuries of this kind, and I know of no agent that is as capable of producing that extreme relaxation of muscular tissue as chloroform, and therefore placing the patient in a condition most favorable for the prevention of lacerations.

I will briefly cite the case of Mrs. T., a young married woman who had an accidental abortion at five month of pregnancy. I was called to her about eight hours after and found her with a retained placenta. The perineum was intensely rigid and the ostium vaginæ closely contracted. The vagina was narrow and the os uteri was rigidly contracted on a protruding umbilical cord. I determined to place the patient thoroughly under the influence of chloroform, with the hope that it would produce sufficient relaxation of the soft parts to enable me to insert the fingers into the uterus and remove the retained placenta. While the patient was under the influence, to my surprise I found complete relaxation of the perineum, vagina and os uteri. These tissues were in such an extremely flaccid condition that I was enabled with perfect ease to pass my hand, not only into the vagina, but into the uterus, which was equally as flaccid, grasp the placenta, detach it from its adhesions and remove it safely. Without the influence of chloroform this operation could not have been performed. During my past professional life I have had occasion to test all the various methods proposed by different authorities for the prevention of laceration of the perineum. I have found them more or less defective, some entirely unworthy. For some years past the method which I have adopted with the most satisfaction was to retract the perineum, with the fingers hooked into the vagina, back toward the rectum forcibly at each pain, so as to maintain a continuous relaxing influence of the perineum until the fetal head presses on that body. When it reaches that stage then the perineum will have been very generally relaxed. At this point the patient is kept under the influence of the anesthetic until the head begins to protrude from the vulva, when it is suspended. In my hands this mechanical dilatation of the perineum, combined with the relaxing influence of the anesthetic has been the means of preventing more lacerations than any other method that I have tried up to this time.

In conclusion, I can truly say that after a long and

favorable experience in the use of chloroform in parturition, that I have found it not only a blessing to the patient but to the physician also. Without the means of relieving human suffering what a dreary, unsatisfactory and repulsive life that of the physician would be. Yet for ages and ages the lot of the woman in the throes of parturition was to suffer, to bear, and submit to its terrible tortures, hopeless of relief until the end came.

For the past half century the achievements of medical science in the discovery and perfection of remedies to relieve human suffering, to improve human health, and prolong human life, have astounded the civilized world and are a source of pride to our profession. And one of the greatest of all of these achievements is the discovery of chloroform.

DISCUSSION.

DR. A. LAPTHORN SMITH, of Montreal, said, that in order to lessen the cries of pain, when a woman is approaching the last stage of labor, he does not refuse to give her an anesthetic, and it is his practice to administer the A.C.E. mixture and allow the woman to give it to herself until within the last half hour; then the assistant administers the anesthetic.

DR. H. W. LONGYEAR, of Detroit, also favored the administration of chloroform in cases of labor, notwithstanding the fact that it is said to predispose to post-partum hemorrhage by inducing inertia of the uterus.

DR. BROWN, in closing, says he has had more than three thousand obstetrical cases, and about fifteen hundred of them were subject to chloroform in more or less degree, and he has not had a serious result.

SOME ORIGINAL STUDIES ON THE OBSTETRICAL FORCEPS, WITH MECHANICAL DEMONSTRATIONS.

Read in the Section on Obstetrics and Diseases of Women, at the Forty-sixth Annual Meeting of the American Medical Association, at Baltimore, Md., May 7-10, 1895.

BY J. J. E. MAHER, M.D.

NEW YORK.

The obstetrical forceps is essentially a conservative agent, and by saving two lives at once, becomes the most useful instrument in surgery. It therefore well deserves the immense amount of ingenuity that has been expended in attempts to eliminate the defects discovered in the common or ordinary forceps. I shall proceed in the simplest possible manner, and leave all abstruse calculations and "*Reine Mechanik*," to be read rather than listened to.

For a workman to understand the character of the tool he requires, it is absolutely necessary for him to be able to appreciate the character of the work to be done. He must learn the conditions and the exigencies of them, before he can calculate the amount of force to be expended and the manner of its application to accomplish the work in hand. By work, I mean the application of force to overcome resistance. To understand this resistance to the descent of the child's head, we must be ready to appreciate certain conditions which obtain in the head of the child, and the obstetrical canal.

In considering the obstetrical canal, we will take two points, the axis of the canal and the character of the resistance offered by the walls. Hodge says: "The axis of the canal has been variously delineated by authors, but by no one with sufficient accuracy."

The circle of Carus, *A*, (Fig. 1) consisted of a two and one-fourth inch radius, having its center at the middle of the posterior surface of the symphysis pubis, and extended not more than one inch and three-eighths directly below the subpubic ligament, in the direction *b. g.*

Hodge took the middle of the subpubic ligament as the center of a circle, *B*, with a radius extending to the axis of the superior strait. This circle might get rid of the difficulty at the outlet, but at the superior strait it was very faulty. Hodge did not believe a single circle could be described satisfactorily; for he, like Naegele, Velpeau, Pierre Dubois and Caseaux, believed, what is apparently true, that the head descended practically in a straight line in the axis of the superior strait.

The circle of the planes *C* is also faulty in approaching too closely to the pubis.

Dr. W. S. Gardiner[1], of this city (Baltimore) deviated from the ordinary manner of describing a circle on the intersection of the planes of the superior and inferior straits produced beyond the pubis. He very properly showed that the tip of the coccyx did not make any part of the inferior strait. For him, and correctly, too, the end of the sacrum and a point half an inch below the subpubic ligament constitute the proper extremities of the inferior strait. While I would admit this as perfectly correct, I can not accept a circle *D* with a radius of seven inches, and which is four and one eighth inches below the subpubic ligament, as representing the axis of the outlet.

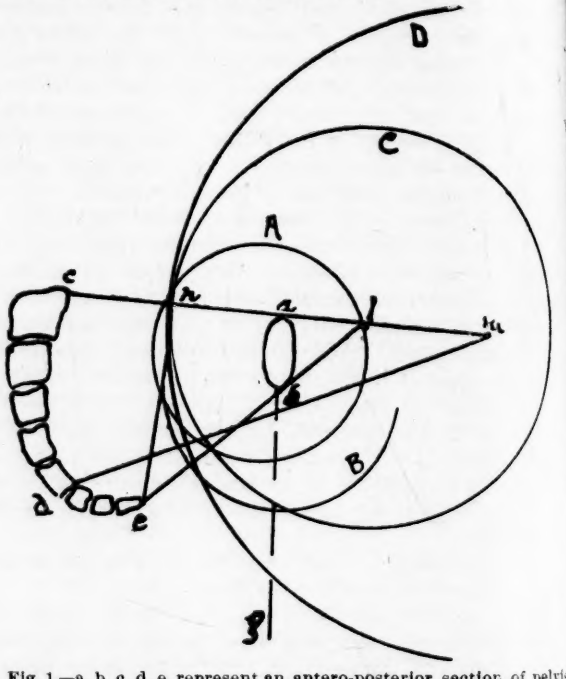


Fig. 1.—a, b, c, d, e, represent an antero-posterior section of pelvis; c, a, the plane of superior, and e. b, that of so-called inferior strait; cl, el, the intersecting planes of these straits; d m, the produced plane of inferior strait, after Gardiner; b, g, vertical line measuring the various axes offered, at outlet; N, E, the axis of superior strait; A, circle of Carus; B, circle of Hodge; C, the generally accepted axis, or the circle of the planes; D, Gardiner's circle of the planes.

It is easy enough to obtain a single circle, a segment of which shall delineate the axis of the obstetrical canal in a very practical way, if we go about it right. The anterior and posterior walls must be observed separately. Taking the anterior wall, we find it offers a uniform unyielding resistance, and that it extends from the top of the symphysis pubis to about half an inch below the subpubic ligament, as demonstrated by Dr. Gardiner. Now, we can easily conceive this anterior wall of the obstetrical canal to form a segment of some circle of which we should find the center. Let us take this point half an inch below the subpubic ligament, and any two other

[1] American Journal of Obstetrics, p. 60, July, 1892.

points on the posterior surface of the symphysis, as any three points in a given segment of a circle, to find the center. By uniting these three points by two chords, then drawing two radii from the center of, and at right angles to, the two chords, and then describe a circle from the point of intersection of the two radii, as the center, passing through the three points on the anterior wall, we have consequently the true anterior wall and the circle *a*, *b*, (Fig. 2) of which it forms a segment. The posterior wall differs materially from the anterior. Instead of two inches, it is more like ten or twelve inches long. The intrapelvic portion of it, about four inches long, limited by the planes of the superior and inferior bony straits, offers like the anterior wall an unyielding resistance; this with the tip of the coccyx pushed back to its extreme limit, is all that need concern us in the study of the posterior wall; because this wall in the extrapelvic canal is so yielding that it offers no *point d'appui* on which to calculate.

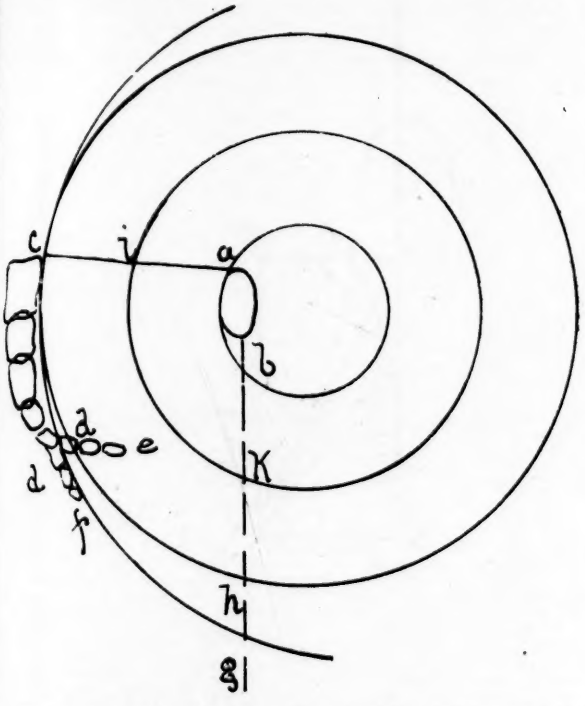


Fig. 2.—Same section of pelvis as Fig. 1, but d, f, shows coccyx pushed back; a, segment of the circle, a, b, represents the anterior wall of the pelvis; c, d, f, the eccentric circle of the posterior wall; c, d, h, the concentric circle describing the same segment; i, k, the circle delineating the axis of the obstetrical canal, almost mathematically correct.

Now, if we take the promontory of the sacrum, the end of the sacrum, and the tip of the extended coccyx, as the three points necessary to find the circle of which the posterior walls form a segment, we shall have a circle passing through each of these points, *c*, *d*, *f*. This circle might be objected to on account of the eccentricity formed by the hollow of the sacrum that is not involved. The hollow of the sacrum conduces to the amplitude of the pelvis, is an advantage, and is therefore not to be taken into account when considering the disadvantages or the narrowness of the unyielding straits in a forceps operation. But when we come to consider this circle in its distance below the subpubic ligament, we find it unsatisfactory. This fact led me to concentrate the circles, which might readily be done by slightly increasing the sacral eccentricity, which really does not exceed one-fourth of an inch at the lower end of the sacrum, and in the upper half means nothing. This deviation from the purely scientific procedure gives a more satisfactory result. We then have the circle *c*, *d'*, *h*, representing the posterior wall. To find the circle of which a segment shall represent the axis between the two walls just described, we have only to take half the sum of the radii of the circles of the anterior and posterior walls, as the radius of the third circle *i*, *k*, which shall be the most equidistant between both walls of the pelvis, of all the axes I have ever studied.

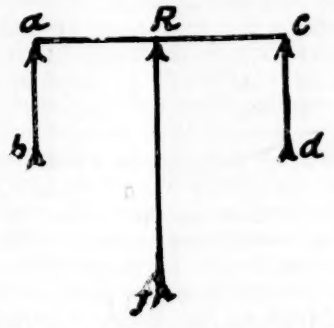


Fig. 3.—a, c, body to which the forces ba, dc, are applied, and which is equally as well opposed to the central balancing or resulting force, f,k.

Having determined the most practical axis of any obstetrical canal, we should now consider the fact that, at the inlet, the resistances offered by the pubis and sacrum are uniform and equal; neither will yield; they are absolutely unyielding. Now, if these resistances are equal, they combine so as to be represented by a resultant or single resistance, whose direction is that of the axis of the superior strait.

It is well known that if the two equal and vertical forces *ba*, *dc* (Fig. 3) are opposed to the two extremities of the body *ac*, they can be replaced by a single vertical force *fR*, equal to their sum and passing through the center *R*, of the body *ac*.

The resistance *io eo*, (Fig. 4) opposed by the walls *ab*, *cd* of the pelvis are, in reality, obliquely directed upward and inward; but these oblique resistances decompose into the inward or horizontal *if*, *ef*, and into the upward or vertical *im*, *en*.

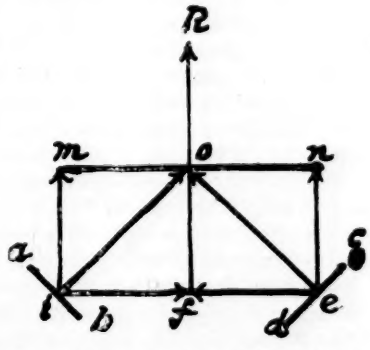


Fig. 4.—ab, cd, the antero-posterior walls of pelvic inlet; io, eo, the resistances or forces presented by (and at angles to) these walls to the body; i n, n, i m, e u, and i f, e f, the resistances into which i o, e o, are decomposed; f r, the resultant resistances replacing i, i n, e u.

These two latter, as we have already seen, have a common resultant *fR*, equal to their sum and vertical like them, passing through the center *o* of the body *mn*. The horizontal or inward resistance *if ef*, tend to effect the reduction of the cranium, while the vertical or upward resistances *im en*, represented by *fR*, oppose its descent.

If two oblique forces could be opposed directly to the two oblique resistances offered, say, by the pubis

and the promontory of the sacrum, *io*, *eo*, what would be the effect? The directions of the forces would be opposite to those of the resistances, that is, downward and outward; the downward force being directly opposed to the axial resistance *fR*, would be entirely useful in overcoming it, but while the inward resistances *if*, *ef*, are useful in producing reduction of the cranium, the outward forces *fi*, *fe*, opposed to them must produce the contrary effect, expand the cranium, and hence increase the resistance.

The oblique forces therefore would expand the cranium, increase the resistance, and thus tend to damage the soft parts of the mother. Supposing the oblique force hypothetically opposed to the oblique resistance *io* were omitted and the force opposed to the oblique direction *oe*, then there would be left the inward resistance *if* and the outward force *fe*, acting conjointly in the same direction, *i.e.*, toward the pubis, thus increasing the resistance at that point, and producing pressure injurious to the mother in direct proportion to the force applied. Hence the application of a force in the oblique direction downward and forward at the superior strait, tends to drive the head against the pubis, make the head rotate about this point, increase the antero-posterior diameter of the presenting part, thus increase the resistance to be overcome, and cause unnecessary pressure to the soft parts of the pubic structure of the mother and a positive loss of a certain percentage of force applied.

This is precisely the effect of the ordinary forceps applied at the superior strait in a difficult case. Any forceps, ordinary or not, in the use of which, force is expressed in an oblique direction, shows the same effect more or less. Hence it can be readily observed without further detail, that to overcome the resistance met with at the superior strait, with the least damage to the tissues of the mother, the force should be directly opposed to the resultant resistance and consequently traction must be made directly in the axis of the superior strait.[2]

If the obstetrical canal were a straight one, this would be a very simple thing to accomplish, but since it is curved forward in such a manner as to have the axis of the inferior strait produce, with that of the superior strait, an angle of about 130 degrees (Hubert), it becomes necessary to have an instrument whose curve will approximate as conveniently as possible to that of the canal. As direct force can only be expressed in straight lines, the application of direct force to such a curved instrument as the forceps, as Simpson's, of which the axes of the blades and shanks form an angle of about 160 degrees, when adjusted at the brim, not only produces a certain amount of injury to the mother, but increases the amount of resistance to be overcome; because the direction of the force thus expressed would be along an oblique line from the middle of the blades f (Fig. 5), to the point of the instrument grasped by the operator, say near the lock *p*.

This direction of the force is by no means directly opposed to that of the resistance *KR*, met with in the axis of the superior strait as necessary to overcome it, but is oblique, downward and forward. It is thus a composite force, that can be decomposed into a vertical or downward *fs*, and a horizontal or forward force *ft*. The downward force being directly opposed to the resistance, will be entirely useful in overcoming it, but the forward force, by crowding the head against and even above the pubis, can only increase the resistance and injure the soft parts of the mother by compression. This compressive effect of the ordinary forceps, bears a direct ratio to the size of the angle *sfp* produced by the oblique direction of the force and that of the axis of the superior strait. The larger this angle, the greater the compressive effect. With Simpson's forceps, this angle is about 30 degrees, and consequently over 55 per cent. of the force applied, is exerted against the pubis.

I might here state that, in the paper already referred to, I termed the above angle, the *angle of compression* and the angle *pft* formed by the forward direction and the oblique direction, the *angle of extraction*. But, to render the subject easier of comprehension, I made the axis of the blades (or rather the longest chord drawn on the axis) coincide with the axis of the superior strait, thus rendering the angle of compression only about 15 degrees, which can rarely happen in practice, with a perfect perineum, and consequently the angle of compression is, in reality, twice as great as that given in the paper mentioned.

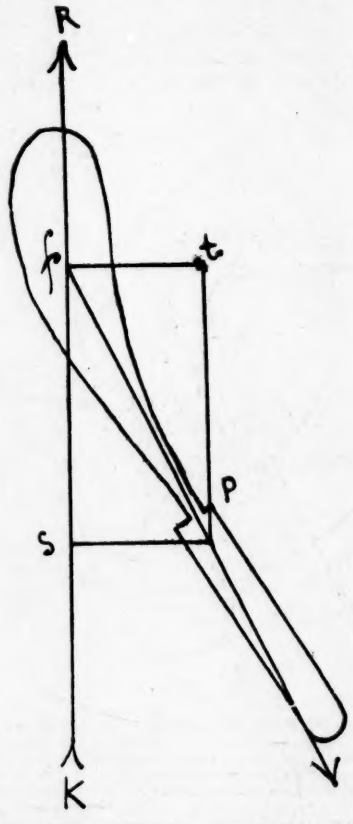


Fig. 5 represents the blade, shank and handle of an ordinary forceps: K, R, the axis of the superior strait or the direction of the resistance: f, p, the direction of the force applied to the center of head, f, from the from the handle near the lock; P, ft, fs, the two directions in which the oblique force fP is actually expressed.

To eliminate the compressive effect in the ordinary forceps, much ingenuity has been spent in devising methods of using it. But these methods, such as that of Oseander and others, are effective to an uncertain extent and the success achieved is of an uncertain quantity; for such methods require, for any degree of success, a hand educated to their use—a hand that has become adroit and skillful by prolonged experience in the manipulation of three forces acting in

[2] For further details see article in Medical Record, June 10, 1893

three different directions at the same time. No wonder then, that such methods have not become popular, while other means have offered a more certain result.

This condition of affairs led to the development of forceps in which these three directions of the force were reduced to two. These forceps, among which are Hubert's and other similar models, I would term "method forceps," inasmuch as a method of manipulating these two forces is inseparably connected with their use. Then another class developed, in which ingenuity has endeavored to reduce the three directions of the force into one, and that one direction, that of the axis of the superior strait, hence the name, axis traction forceps. Of this class I have not found, in the market, a single positive representative. If we take the rule laid down by Milne Murray, of Edinburgh, as governing the construction of the correct axis-tractor, and published by him in the *Edinburgh Journal*, and republished by Dr. Keiller in the *American Journal of Obstetrics*, and examine it carefully, we shall find that no instrument made according to that rule is an axis-tractor.

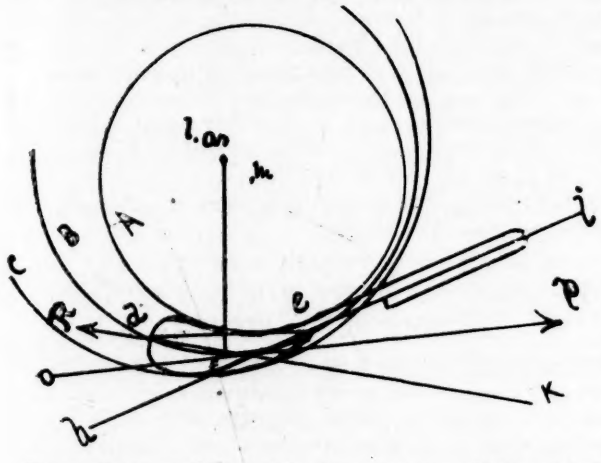


Fig. 6.—The central figure, d, f, e, i, represents an ordinary forceps blade, shank and handle; A, the circle of which a segment represents the smaller or anterior curve of the blade; C, the circle of which a segment represents the posterior curve; B, the circle of which a segment represents the axis of the blade; hi, the axis of blade and shank; de, the cord of the arc forming the axis of the blade; f, is the center of the axis; Op, is a tangent to this arc drawn on the central point f, and parallel to the cord de; KR, represents the axis of the superior strait and the direction of the resistance.

Milne Murray draws a cord on the axis of the blade, and then draws a tangent line, passing through the central point of this axis, and parallel to the chord. He insists that, if the instrument is correctly made, the stud of the tractor handle lies along that tangent line.

If we take a Simpson forceps, and determine the axis of the blade by means of eccentric circles, made as before, we can readily prove this. The anterior or smaller curve of the blade is the segment of a circle *A* (Fig. 6), whose radius is five and one-fourth inches, and the posterior curve is the segment of another, *C*, with a radius of eight and one-fourth inches. Having the two circles, *A*, *C*, which do not intersect, it becomes an easy matter to find the third circle, *B*, whose radius is six and three-fourths inches, a segment of which represents exactly the axis of the blade, *d*,*f*,*e*. Murray and Keiller, by the way, determine their axis on the assumption of guess points, chosen where the curve of the blade is supposed to begin and end. If we draw the axis of the handles and shanks, *h*, *i*, its point of junction with the axis of the blade, *e*, makes the beginning of the latter, and if we unite this point with that, at the intersection of the axis and the tip of the blade *d*, we shall have the longest possible chord drawn on the axis, which is five and three-fourths inches. If a tangent be drawn on the central point of this arc or axis, and parallel to the chord just described, we shall have the line along which Milne Murray tells us we must make traction. Now, if you will recall the fact that the axis of the superior strait is three inches behind the posterior commissure of the vulva, we can readily observe that since this tangent is not more than one and one-half inches behind the shanks, it is impossible to make axis-traction after Milne Murray's notion. On the other hand, the real axis of the superior strait is represented on the instrument, by uniting the highest point of the axis of the blade, *d*, and its center, *f*. Such a line produced, *KR*, would be three inches behind the shanks, near the the handle. This, indeed, is the line along which the stud should lie and traction should be made, to be in the axis of the superior strait.

Having, to some extent, determined the character of the work to be effected at the superior strait, and having supplied the requisite tool in the axis-traction forceps, we may safely imagine the head of the child to have passed the superior strait and to rest on the

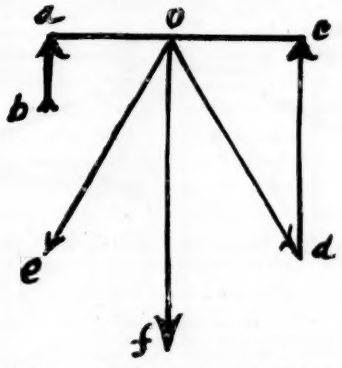


Fig. 7.—ac, body opposed by the two unequal resistances, ba, dc; of, the force applied in the axis or middle of the body, ac; oe, the direction in which the force, of, is actually spent, *i.e.*, in the posterior oblique; od, the anterior oblique representing of, oc.

floor of the pelvis. Now, we must consider that the conditions which obtained at the superior strait and necessitated axis-traction, being different from, and I might say absolutely contrary to, those at the outlet, the exigencies of the latter are of an entirely different character from those of the former; and consequently, when the direction of the force leaves that of the axis of the superior strait, the axis-traction instrument becomes a dangerous one. The conditions and exigencies of the outlet differ from those of the superior strait, in that the resistances are *unequal* and consequently can not be represented by a central resistance whose direction would be that of the axis of the canal—one part of the strait being composed of a fixed, bony, unyielding resistance, as offered by the pubic arch, and the other part composed of the yielding structure of the perineum, which offers much less resistance than the former. These two *unequal* resistances allow the balance of the force applied in the axis of the canal, to be spent on the perineum, as the point of less resistance, which can rarely escape rupture.

When all the resistances opposed by the walls of a canal to a body moving in it, are *equal*, they can be represented by a single resistance, expressed in the

center or axis of the canal, and overcome completely by a force exerted along that axis, as illustrated at the superior strait; but when the resistances are unequal and the force is applied in the axis of the canal, the body is arrested at the point of greatest resistance, and the force continuing, it is propelled in the direction of the lesser resistance, as well as in that of the axis of the canal. In fact, it rotates around that point of greater resistance, as around a pivot, thus producing extension of the head, and increasing the antero-posterior diameter of the presenting part.

If the two unequal and vertical resistant forces *b a d c*, (Fig. 7) be applied to the body, *a c*, they can be replaced by a single vertical force, not passing through the center *o* of the body *a c*, but through a point corresponding to its percussion point, approaching the greater resistance, *d c*, in proportion to the greater weakness of the resistance, *b a*. If, for example, the resistances were in the proportion of 1 to 3, these resistances would be equally overcome if the force were applied three times nearer the point of greater resistance. But, since this is impracticable, and an axial force, *o f*, tends to propel the body, *a c*, backward toward *a* and downward toward *f*, or along their any resultant *o*, *e*, in an oblique direction downward and backward; to relieve the strain on the

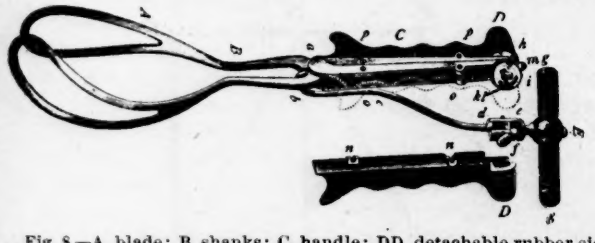


Fig. 8.—A, blade; B, shanks; C, handle; DD, detachable rubber side pieces; E, the axis traction attachment; a, socket between shanks for hook b, of traction rod; d, ball end of rod; e, clamp socket for d; f, thumb-screw for screwing the ball and socket joint; gg, the rubber cross bar; h, the ordinary Elliot wheel and threaded bar; i, an additional wheel with a half-threaded slot on opposite side, which both form the lock; KI, a quarter-circle slot and piece limiting the motion of lock-wheel or small knob on lock-wheel; n, n, metallic lugs which hold side pieces in place; oo, grooves in the metal for the reception of the lugs; pp, screws passing antero-posteriorly through the metal and flat where they pass through the grooves; a quarter turn of these screws, locks or unlocks the side pieces securely to the metallic portion.

weaker structure, the perineum, we have only to divert the oblique direction of the force *o e* into the opposite oblique direction, *o d*. Thus it will be observed that this anterior oblique direction of the force, *o d*, corresponds with the oblique direction of the force *f p* (Fig. 5) in the ordinary curved forceps, as demonstrated above.

Hence, the proper or perfect obstetric forceps is one in which the force can be expressed in the axis of the superior strait, and in the anterior oblique direction at the outlet.

The forceps which I have the pleasure of exhibiting to you, (Fig. 8) consist of the old familiar Simpson blades and shanks, the Elliott handles, and this simple traction rod, and an exceedingly practical lock, and permits admirably of just such expression of the force (Fig. 9). At the superior strait it is an excellent axis-traction forceps; at the outlet it is the most desirable model of the ordinary forceps. Though the fetal head is free to rotate, the instrument can not slip. It is not a Tarnier model, and possesses none of the defects of such; nor does it require an expert to use it. Whoever can use an ordinary forceps can use this as readily and as successfully as any expert. It does not produce that feeling of insecurity and uncertainty, for the muscular sense of the operator is always called into play the same as with the common forceps.

The perineum may be pushed back by the shanks of the instrument, without seriously altering the position of the blades, just as in the use of the common forceps. This, in some cases, is an absolute necessity, depending upon the situation of the posterior commissure of the vulva. This adaptability

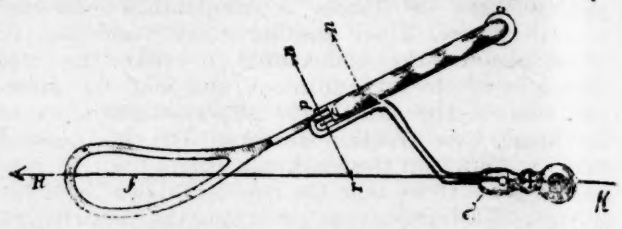


Fig. 9.—Side view of forceps, with its mechanical effect; KR, direction of resistance as met with at the superior strait; f, center of blade; D, ball and socket joint. Notice that the socket piece and the ball end of the rod are in the same straight line. P, decussation of shanks showing the socket receiving the hook end of the traction rod; pn, pe, the actual expression of the force evolved from the lever effect of the traction-rod; en, the direct leverage force translated to pn.

of the instrument to the canal is possessed by no other non-rigid forceps. There is, in fact, no other instrument that will permit of rotation during the traction, and allow of axis-traction in every case.

Bearing in mind the correction of the conventional error hereinbefore mentioned, a very adequate description of the forceps will be found in the *Medical Record* of June 10, 1893.

This instrument is manufactured by Richard Kny & Co., of New York city.

THE VAGINAL ROUTE FOR OPERATIONS ON THE PELVIC VISCERA.

Read in the Section on Obstetrics and Diseases of Women at the Forty-sixth Annual Meeting of the American Medical Association, at Baltimore, Md., May 7-10, 1895.

BY D. TOD GILLIAM, M.D.
COLUMBUS, OHIO.

Everything indicates that we are about to have an epidemic of transvaginal surgery. Salpingectomy, cholecystotomy, nephrectomy and operations for appendicitis have ceased to be novelties and have therefore to an extent lost their charm. Men are merely boys grown up and, like boys, are fond of exploit and adventure. This in the main results in good by advancing knowledge, developing manual dexterity and evolving new methods. The pity is that in the name and guise of science and the legitimate pursuit of this noblest art so much is done for self, to the detriment of the patient. The surgeon should never aspire to a record; the best interests of his patient, the advancement of his art and the greatest ultimate good to his race should be the aim and object of his life. To such an one, fame, honor and confidence of the profession and people will come in due time, and will come to stay. From this standpoint let us look into the merits and demerits of this new fad; endeavor to prescribe its scope and limits, and by comparison with older and better known methods strive to affix its proper status in gynecologic surgery.

That many operations on the pelvic viscera through the vagina are practicable is well known to every one at all conversant with gynecologic history, and there are few gynecologists of long or extensive practice who have not essayed most of them. Some years

ago, indeed, it was the favorite and almost only method practiced, and there are doubtless elderly men in this assembly to-day who could give us pointers in vaginal surgery. We can all remember the time when abscesses and other fluid collections in the pelvis were attacked through the vaginal vault and when submucous and interstitial uterine fibroids, even of large size, were removed per vaginam. At a later period the uterine appendages and even ectopic gestation, ovarian cysts and the uterus itself were removed by this route. It remained for Péan and his collaborators to cap the climax by removing the fixed uterus by morcellation through the same channel. It is the latter, with its extensions to other conditions, that has given the wonderful impulse to transvaginal surgery that we witness to-day.

Let us briefly inquire into the advantages and disadvantages of the vaginal route, as compared with that by abdominal section, as it is between these that the issue lies. In the former we obviate section of the abdominal wall with its resultant scar. This scar is not only disfiguring and repulsive to the sensitive nature of the most sensitive of beings, but entails a feeling of weakness and insecurity, is at times painful and not infrequently the site of hernia. Furthermore, the omentum or bowel invariably becomes adherent to it and is liable to give rise to distressing, if not dangerous sequelæ. It is now generally conceded that the shock of the vaginal operation as compared with that of abdominal section is trivial, because the intestines, the most sensitive of the abdominal viscera, are not exposed or handled. This is far-reaching, for not only may the shock itself be dangerous to life, but by diminishing vital resistance it predisposes to sepsis and cripples the functions of important organs. Intestinal paralysis does not occur.

Sepsis, the bane of abdominal surgery, is less frequent in the transvaginal surgery: 1, because the pelvic peritoneum is better able to cope with germs; 2, because the route of invasion is less direct and against the tide of outflowing serum; and 3, because the germicidal powers of the splanchnic viscera are unabated. From a well-known fact that the vagina is the natural habitat of pathogenic germs of many varieties, that it is sometimes exceedingly foul, and from the supposed impossibility of rendering it surgically clean, I, with many others, had a dread of entering the peritoneal cavity by that route and always, when possible, refrained from doing so. I now have no more hesitation on that score. I believe with douches and a thorough scrubbing with creoline mollin we can render the vagina as aseptic as the skin. Again, in removing septic matters through the abdominal incision there is always a chance of peritoneal contamination and in many instances, as enucleating pus tubes, inundation of the cavity is unavoidable. This is always avoidable in the operation from below. Drainage through the vagina is incomparably more efficient than through the abdomen. The vaginal drainage is natural, perfect and with gravity. Abdominal drainage is against gravity. Not only so, but the animal fluids coating the tube or filling the meshes of the gauze afford an excellent culture medium for stray germs, which naturally make their way downward or inward. On the other hand, the outflow of fluids toward and into the vagina, not only prevents the accumulation of septic matter in the pelvis, but washes away any that may be seeking entrance from below. So far the advantages are decidedly with the vaginal route, but it has its disadvantages. It is optional with the abdominal surgeon how much room he may make for himself. He can always keep the objective point under the eye or finger. He has ample facilities for seeing and knowing the position and surroundings, for avoiding important structures, ligating vessels and guarding against mischance. The ability to control circumstances and to advance with open eyes constitutes good surgery. Moreover his field is not abridged or limited. He can pursue the malady to the uttermost limits and he can preserve the healthy while eliminating the diseased. Should there be a mistaken diagnosis he can tack about and still be master of the situation. With the vaginal surgeon it is different. His field is limited; his operative space not amenable to optional extension. His facilities for meeting emergencies are meager. He is working in cramped quarters and ofttimes at a great disadvantage. It follows, then, that vaginal surgery has a sphere of its own. It can not aspire to supplant abdominal surgery nor yet in any large measure trench upon it. The possibilities of vaginal surgery will depend largely upon fortuitous circumstances. With a large, lax and shallow vagina many operative procedures may be feäsible, but with a narrow, deep and unyielding one, even the more common of the operations may be rendered difficult or impossible. I speak knowingly on this subject, for I have had experiences in both directions. I have removed submucous fibroids, pelvic cysts and the malignant uterus as large as the fetal head, sometimes with comparative ease. I have signally failed to remove the fixed uterus on two occasions, on account of the narrowness, depth of the canal and unyielding structures about its outlet. In the first instance, incising the perineum failed to relieve the situation on account of the great depth of the canal. In the last, I was provided with Péan's retractors and all the appurtenances used by him. It was with the utmost difficulty that the retractors were introduced, and then, after prolonged effort it was found impossible to dilate the passage. As it is a cardinal rule never to go with the scissors or forceps where the eye or finger can not follow, I found it impracticable to complete the operation. Whether Péan or Jacobs could have done so, I know not, but I do know that the average surgeon would have failed as I did or done worse at a blind attempt at the impracticable. To my mind the field of transvaginal surgery includes hysterectomy of the normal or slightly enlarged uterus, the removal of the appendages when accessible, the drainage of the pelvic abscess, the morcellation of intra-uterine fibroids of moderate size and, possibly also, the extirpation of free cysts, low down in the pelvis.

It is unnecessary for me to say anything with reference to the technique, as this has been worked out so thoroughly as to leave little to be desired or expected. There are one or two points, however, to which I would like to call attention, and which I I have found in my own practice to have been of material advantage. A modified Trendelenburg position contributed greatly to the facilities for operating, by giving a much better light and by preventing the prolapse of intestines, which at times are annoying. Should there be purulent or septic collections in or about the field of operation this position would

never be dispensed with. In many cases the short posterior retractor is vastly more efficient than the long ones used in Europe. It enables you to bring the vaginal vault within easy reach, and to follow the steps of the operation with much more ease and precision than when one has to work in the depths of a deep hole. Even in cases of fixation I have been able at times to use the short retractor to greater advantage than the long one, and I am so imbued with its value that I would be loth to attempt any of the more serious operations through the vaginal vault without having one at hand. Feeling the want of a self-retaining retractor, that was simple and efficient, I devised the instrument which I now show you. You will observe that it consists of two pieces. The holder which passes under the sacrum and is held firm by the weight of the body and at the extremity of which is a steel pin for holding, and a screw for adjusting, the blade of the retractor at any angle. The retractor has a short handle with notches on the inner aspect and a ring at the end. In adjusting the speculum it is introduced as any other, then the index finger of the left hand is placed on the blade where it curves inward, while the thumb is placed under the free end or screw of the holder. Now, with the finger of the right hand in the ring of the handle, the retractor is guided into position through the slot on the side, while the blade and holder are approximated by pressure between the thumb and finger. Once in position it is easy to secure the desired degree of perineal retraction by increasing the pressure when it locks itself automatically. Now by turning the thumb screw the inclination of the blade may be changed at will. The mechanism is very simple, the movements are easy, the result all that could be desired. Besides the instrument, as a whole, takes up very little space and can be carried almost as easily as a bivalve speculum.

REMOTE RESULTS OF REMOVAL OF UTERINE APPENDAGES.

Read in the Section on Obstetrics and Diseases of Women, at the Forty-sixth Annual Meeting of the American Medical Association, at Baltimore, Md., May 7-10, 1895.

BY E. E. MONTGOMERY, M.D.

PHILADELPHIA, PA.

The introduction of the operation for removal of the tubes and ovaries as advocated almost simultaneously by Battey, Tait and Hegar, though upon distinctly different lines, opened up an extensive field for the practice of abdominal surgery. The enthusiasm of their followers necessarily resulted in the practice of the procedure in many cases when it was of doubtful utility. Battey advocated the operation for intolerable dysmenorrhea; Tait for distinctly recognizable pathologic lesions in tubes and ovaries, principally of an inflammatory character; Hegar to produce an artificial menopause in cases of uterine hemorrhage otherwise uncontrollable.

These distinctly defined indications soon became extended, so that pelvic pain of slight degree, whether associated with menstruation or not, has been considered an excuse for the removal of the organs. Ovaries and tubes have been removed in which careful macroscopic investigation has failed to disclose much, if any, evidence of disease.

The experience of over twenty years has afforded opportunity to study the immediate and remote effects of operations which, at least, must have a profound effect upon the mental and physical nature of the individual in the interference with the procreative function.

It is a well recognized law of nature that unused faculties atrophy, so that it is not surprising to find that after castration of the unmarried female, the genital organs become smaller, the vaginal rugæ disappear and the mucous membrane is thinner and paler. In the married or those who subsequently marry, sexual desire becomes quiescent or even disappears, and to some the marital relation is painful and repugnant. Instead of being a willing and sympathetic partner in the act, she passes through the stages of indifference and passive suffering to disgust and distress.

If the condition just mentioned were the only unpleasant symptom, it would be a matter of but little moment. The most marked influence is upon the nervous system. It is generally recognized that the climacteric is a critical period in the life of every woman, one to which she looks forward with anxiety, realizing that hereditary traits and unpleasant phenomena are likely then to manifest themselves. If this be true when the woman matures and reaches the period undisturbed, how much more likely is she to suffer when the climacteric is abruptly and artificially induced, without nature having had an opportunity to prepare her forces for the changed relation.

Every operator is familiar with the flushing, vasomotor disturbances not unfrequently affecting the action of every organ of the body. These do not always disappear in a short period as in the natural menopause, but may continue for years, being a constant source of annoyance and discomfort. While it is true that many patients recover an appearance of good health who were previously great sufferers, in many this improvement will be found to be but temporary. Frequent attacks of neuralgia or neurasthenic pain in both ovarian regions as intense as prior to operation, in the uterus, in the intestines, the bladder, or the rectum; insomnia, restlessness and irritability of temper are not uncommon, Even if the individual may have had no desire for offspring, the assurance that motherhood is denied her frequently leads to intense longing for a child. When, however, she has been desirous for children and the possibility is precluded by an operation, the declining sexual appetite not unfrequently leads to a profound melancholy in which she feels life without solace or comfort.

Changes in pigmentation have been observed and it has been asserted that through menstruation certain material is eliminated which in its cessation is retained, producing splotches and discolorations of the skin, or the profound nervous manifestations.

The mental and nervous phenomena may be actuated or aggravated by the sequelæ of the surgical procedures, such as fistulæ, ventral herniæ, painful cicatrices, adhesions of intestines to the uterus, to the stumps, and to the bladder; cellular exudation, infection of ligatures, and the formation of abscess, immediately following the operation or years later.

A case recently came under my observation where, over four years after castration for bleeding fibroid, an abscess formed, which opened in the upper part of the cicatrix. An incision disclosed a large loop of silk in the abscess cavity.

Leucorrhea and irregular profuse uterine hemor-

rhage not unfrequently follow the removal of both ovaries. Such an array of unpleasant phenomena, associated with the necessary mortality of the procedure when carefully and conscientiously done, should cause the surgeon to hesitate and weigh the condition of each case carefully before resorting to surgical procedure.

I would by no means wish to be understood as denying the necessity and wisdom of operative procedure in necessary cases, but would demand that careful study of the case should determine that the determined procedure was the necessary course for relief.

A careful survey of the immediate and remote influences of pelvic surgery justifies the following conclusions:

1. No mutilation or sacrificial operation should be done, where there is a reasonable probability of relieving the inflammatory condition through vaginal incision and drainage.

2. Efforts should be made to preserve portions of an ovary and a tube through resection, where partially diseased.

3. Where the ovaries and tubes are diseased, to such a degree as to require their complete removal, the patient is less likely to suffer from profound nervous phenomena if the operation be associated with hysterectomy.

4. Castration should be done for neuroses, only after it has been demonstrated by the experience of capable neurologists that the operation is the *dernier ressort*.

DISCUSSION.

Dr. Henry P. Newman, of Chicago—said the subject under discussion was one of vital interest not only to the operator, but decidedly so to the patient. He had never seen a case in which removal of the uterine appendages produced insanity or an outward physical change in the patient, nor had he seen it result in any sexual deterioration to any great extent. In some instances, possibly that had been complained of. He expressed the opinion that before the operation is performed, its possible ill results should be carefully placed before the patient. Furthermore, it should only be performed for actual structural changes in the appendages, and not for mere pain.

Dr. M. B. Ward, of Topeka, Kan.—said that where healthy ovaries are removed in young women, very marked nervous symptoms are produced—indeed, so marked that we ought never to do the operation if we can avoid it. He has never seen insanity result from it, however, nor a loss of the sexual appetite. The operation is sometimes followed by a very troublesome leucorrhea. In all cases it is well to postpone the operation as long as possible. Nervous and hysterical patients have greatly improved after the operation.

Dr. Rufus B. Hall, of Cincinnati—had frequently seen patients suffer mental depression following operations for removal of diseased appendages. With one exception he had never seen insanity follow the operation. This exception was a woman, two of whose sisters had previously died in an insane hospital, and who showed a strong history of hereditary insanity. She died some time after the operation had been performed. There was a large suppurating ovary, and the woman had had gonorrhea. He does not operate for reflex symptoms. Accumulation of fat usually occurs after the operation, this disappearing, however, at the menopause. He has never seen a growth of hair following celiotomy. So far as blunting of the sexual appetite is concerned, he had seen a few instances where this feeling was blunted. In no instance had it entirely disappeared.

Dr. G. Betton Massey, of Philadelphia—remarked that his experience on this subject was possibly somewhat peculiar, in view of the fact that the cases he had seen had been operated upon by other men, and his experience fully corroborates the large number of instances mentioned by Dr. Montgomery, of physical and nervous disorders that follow the removal of the ovaries. In one case a form of melancholia undoubtedly resulted from the operation. In many cases, after the removal of the ovaries in young girls, their moral nature is greatly changed; the sexual feeling is not extinguished, but is largely limited by the operation. He has never seen an extra growth of hair on the face or elsewhere result from the operation.

Dr. Howard A. Kelly, of Baltimore—had encountered six or eight cases of insanity after operation, one case after an abdominal operation, and one after curettement. All of the abdominal cases got well. When a woman asks him what bodily changes will follow the operation he tells her that she will get stouter and recover her health. The possible loss of sexual power does not militate against the performance of the operation, because these patients are usually in such a condition that they have not enjoyed sexual intercourse for years. On the contrary, the operation often restores family relations which have been impossible for years.

TREATMENT OF CONTRACTIONS OR STENOSIS OF THE UTERINE CANAL.

Read in the Section on Obstetrics and Diseases of Women, at the Forty-sixth Annual Meeting of the American Medical Association, at Baltimore, Md., May 7-10, 1895.

BY WILLIAM A. B. SELLMAN, M.D.

PROFESSOR OF OBSTETRICS AND DISEASES OF WOMEN, BALTIMORE UNIVERSITY, BALTIMORE, MD.

Contracted condition of the uterine canal has been treated by various methods. The slitting up of the cervix is a very unsatisfactory operation, as well as a dangerous one. The enlargement of the canal by means of the sharp curette is uncertain in its results, as the instrument merely scrapes furrows in the tissues and the part soon returns to its previous small caliber. I have attempted to obviate this by imparting a circular motion to the instrument during the operation and, by this means, reaming out the dense tissue at the point of contraction.

Hundreds, yes, thousands of women suffer from dysmenorrhea on account of the uterine canal being contracted at some point. The condition may be acquired or congenital. After amputation of the neck of the uterus, the external os frequently contracts to such an extent that we fail to pass our smallest probe. I intend in this paper to speak more definitely as to the stenosed condition that we find existing at the internal os. These contractions are generally formed of tissue of a denser nature than normal mucous membrane and many times it is of a decidedly cicatricial character. This density of the tissue and this cicatricial character is frequently the cause of the displacement of the organ that we find existing in many of these cases. The fundus of the uterus is pulled over one way or the other, and after the caliber of the canal has been increased we find that the displacement has also been corrected.

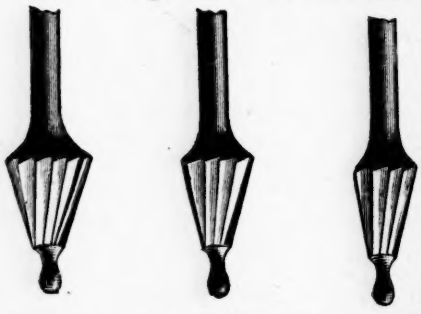
I desire at this time to call your attention to a new instrument to remove this condition of stenosis. I call it my reamer.

This reamer is intended to be used to take the place of the slitting up operation and also to supersede the use of the curette. Dysmenorrhea persisting on account of a narrow and, at times, an almost impervious condition of the uterine canal, or due perhaps to the existence of a ring of dense cicatricial tissue at the internal os, which dams back the flow of blood or secretions—these call for the use of the reamer. Rapid dilatation in many cases gives but temporary relief, as the parts return to their previous condition soon after the stretching operation has been performed. The dilator does not remove the dense tissue; it only lacerates it. The curette merely scrapes furrows in the tissue and the contraction remains.

With the use of the reamer, this tissue is reamed out or cut away by the knives placed upon the sides of the instrument. They are made in three sizes; begin with the smallest and gradually enlarge, and when you have accomplished all that you can do with this size, withdraw it and introduce a larger size.

The blunt probe-pointed end is introduced first and pushed in the constricted canal, a circular motion is imparted to the handle, and a moderate amount of pressure is exerted to cause the knives to engage upon the tissue, which at times is so hard that even the keenest knife has difficulty in making an impression upon it. The instrument works very much like a pencil sharpener paring away the tissue in slices. At times the constriction is so great that a small dilator has to be made use of, before the expanded portion of the instrument can be made to enter the narrowed uterine canal. As a rule, if the operation is properly carried out, a second operation will not be required. The patient should be under the influence of an anesthetic, if there be much tissue to be removed, or if she be of a nervous temperament.

The operation is frequently performed at the surgeon's office and the patient allowed to go about her accustomed duties; this is in cases of slight stenosis. When a large amount of tissue has been removed, it is prudent to place your patient in bed from four to seven days. After removing the tissue, swab the part operated upon with pure carbolic acid, and introduce a strip of iodoform gauze to the fundus uteri, allowing the free end to extend down into the vagina to the lips of the vulva. This insures thorough drainage and prevents the raw surfaces from uniting by first intention. Allow this drainage tape to remain until the evening of the second day, then the nurse or patient removes it and a carbolized douche is given. The surgeon introduces another drainage tape at noon of the following day. Continue this treatment for ten days. These reamers will not remove fungous growths from the walls of the uterus, neither are they intended to remove retained membranes from the uterine canal.



Donations to New York Charities.—Under the will of Mrs. Bertha May, late of New York City, a property valued at $23,000, has been donated to four charitable institutions in that city and Brooklyn. She leaves her property to the Mount Sinai Hospital, the Home for Aged and Infirm Hebrews, the Hebrew Orphan Asylum in Brooklyn, and the Home of the Little Sisters of the Poor.

A NEW SELF-RETAINING PERINEAL RETRACTOR.

Read in the Section on Obstetrics and Diseases of Women at the Forty-sixth Annual Meeting of the American Medical Association, at Baltimore, Md., May 7-10, 1895.

BY A. E. ROCKEY, A.M., M.D.
PORTLAND, ORE.

The first requirement in operations on the uterus is that the organ should be exposed and held in such position that it may be accessible. The perineal retractor of Sims was a great step forward, but its narrowness and length of blade and the inconvenience of the prone position have at the present time consigned it to a rather minor place as an instrument for examination.

The retractor of Simon or some of its numerous modifications, with their shorter and broader blades, have almost universally superseded Sims' instrument in operations on the uterus. My own preference has been for that of A. Martin. It has essentially the Simon blade, with a broad outer flange, and a long, heavy handle. The perfect command of the field of observation given by this instrument, when held by skilled assistants, leaves but little to be desired.

The marked advantage of a short intravaginal portion is that it offers no obstruction to the ready descent of the uterus when drawn by the tenaculum forceps.

For vaginal hysterectomy, high amputation of the cervix, ligation of the uterine arteries, or any operation requiring full command of the vaginal vault, no self-retaining or purely mechanical device can ever take the place of trained assistants. In this way only, can that ready change of tension or position be obtained by word or sign, that facilitates so much the work of the operator.

Numerically speaking, however, operations of this class form but a small part of the work of the practitioner. It is a matter of common observation in practice that conditions requiring dilatation and curettement or simple trachelorrhaphy outnumber those mentioned five to one. Indeed, in general practice they outnumber all other operations on the female organs.

Hospital experience can not be taken as perfectly representing private practice in this respect, and yet the most extensive reports substantiate the truth of this statement.

The second Report in Gynecology from Johns Hopkins Hospital, covering a period of nearly three years, contains a table of 815 general gynecologic operations not involving celiotomy.

On examination of the table we find that 416 operations involved the cervix or cavity of the uterus. They may be divided into three classes, as follows:

1. Dilatation and curettement for stenosis, endometritis fungosa, pyo-physometra and retained products of conception—265 operations.

2. Trachelorrhaphy for lacerated cervix—103 operations.

3. Curettement of cancerous cervix and removal of polypi of cervical canal—48 operations.

The considerable preponderance of these minor operations and the difficulty or inconvenience of always obtaining suitable assistants, and, sometimes the embarrassment of their presence in private families, has made it desirable to have some purely mechanical device for exposing the uterus.

The limited field of operation has also made it possible to accomplish this with a greater or less degree of success. For these reasons a considerable number of such instruments have been devised.

Prominent among them is Emmet's self-retaining perineal retractor. The perineal portion is shorter and wider than Sims' and the point of resistance is an oval frame to rest over the dorsum of the sacrum. It was designed for use in the semi-prone position. By reason of the extremely various contour of this part, the frame does not always fit well and is liable to slip. To obviate this difficulty, the modifications of Cleveland, Hunter and Erich have shoulder straps or bands to hold them in place. These contrivances have proven awkward and cumbersome and are, consequently, but little used.

The Edebohl retractor, which is held in place by a bucket of shot or other weight, would be efficient when the conditions of its use are well complied with, but it must be inconvenient in private practice.

The most recent instrument of this class, and, I think, the best yet presented to the profession, was devised by Dr. Samuel C. Beach, and was exhibited at the June meeting of the Chicago Gynecological Society.

The retractor is an ordinary perineal retractor, but has the handle forked and turned at right angles to the plane of the blade. The retaining mechanism consists of a flat band of metal, hinged at its center for convenience in carrying. In use, this band is slipped under the body of the patient, lying in the dorsal position, with the thighs flexed, thus making a fixed point of attachment for the retractor, which slips into the inlet ring in the retaining bar and is held by a thumb-screw. The legs are held by a McBride-Packard yoke.

With the same object in view, I have devised an instrument which, unlike any other of its kind, utilizes the under surface of the pubic arch as a more convenient and uniform point for the support of the retractor. This instrument consists of two pieces—a perineal retractor and a sub-pubic rest.

The perineal retractor has a blade like Martin's, ane also a long, heavy handle, but with the hook placed posteriorly at the lower part of the swell, thus affording a very firm grasp and at the same time a rest to the hand of the assistant. By examining Martin's retractor it will be seen that the hook is placed at the end of the spindle-shaped part of the handle, and is always about two inches below the firm grasp given by the large part of the handle.

To a considerable extent I am indebted to a remark by one of Martin's assistants for this improvement. It was after a long clinic, where two vaginal hysterectomies and several minor operations had been performed, that I tarried to speak with the assistant, who referred to that feature of the otherwise perfect instrument as, "*Nicht bequem für ein assistent.*"

The perineal part may be used alone to be held by an assistant in major operations on the uterus, and possesses all the merits of Martin's with the addition of a better grip on the handle. It is also an admirable retractor for use in abdominal work.

The heavy handle has been objected to by some who have examined, but not tried, the instrument. This is one of the decided advantages. It gives the assistant an easier command of the perineum, not only for its retraction, but with the instrument I have devised for its shortening by upward pressure as well, when occasion requires it.

The distinctive feature of my instrument is the sub-pubic rest from which retraction is maintained. The blade is short, well curved on the top to fit the under side of the pubic arch, and corrugated near the tip to prevent slipping. It is attached to the perineal portion by a notched bar, sliding in hooks on the side of the blade; the compression of the parts locking it firmly in position without intervention of screws. It is easily adjustable, and may be placed or detached without removing the perineal portion. This piece has been cast from phosphor bronze to give it greater strength.

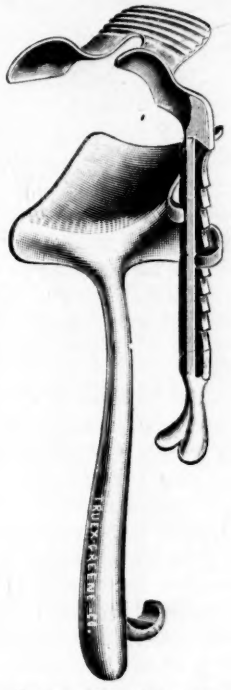


Fig. 1.—The auther's self-retaining perineal retractor.

In use, the perineal portion should be first inserted and well retracted, and then the subpubic rest introduced and pushed to place. If the directions of this sentence are carefully followed there can be no difficulty in its use. The perineum should be retracted by a strong pull on the handle and but little upward pressure will be required on the subpubic rest. In fat women the thickness of the external parts make it necessary to push the upper part of the instrument well in between the labia in order that the curve of the short blade may rest upon the pubic bone. By the observance of these precautions there will be no slipping, and the command of the field of operation is almost as great as that obtained by manual retraction by good assistants and surely superior to timid makeshifts that must sometimes be resorted to in emergency. The blades being short, the cervix is not always exposed at once. The vaginal fold should then be pushed aside with the finger and the cervix seized with the tenaculum forceps and drawn down.

In connection with operations of this kind, I desire to refer to two adjuncts, viz., leg holders and tenaculum forceps. A most convenient and efficient leg holder may be made from a strip of muslin half a yard wide and two yards long, with slits through the center through which the arms and shoulders

are passed. The thighs are then fixed and the bandage placed around well under the knee and fastened with a large safety pin.

The heavy American bullet forceps, with lock, has proved not only the best instrument for holding

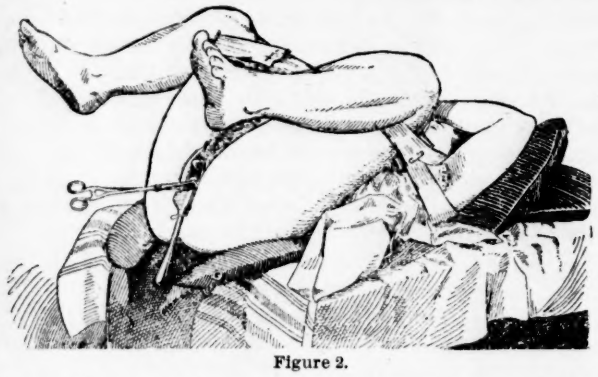


Figure 2.

down the uterus but a superior tenaculum and tissue forceps in many general gynecologic operations as well.

In the year that has elapsed since my instrument was devised, I have used it in many operations on the cervix and cavity of the uterus and the requirements have been admirably met. It was constructed for me by Charles Truax, Greene & Co., of Chicago.

THE SERUM TREATMENT OF DIPHTHERIA.

Read before the Michigan State Medical Society, at Bay City, June 6, 1895.

BY CHAS. T. McCLINTOCK, PH.D., M.D.
ANN ARBOR, MICH.

There can be no reasonable doubt that the larger part of the ill-effects of diphtheria, are due to the soluble poisons (toxins) formed by, or during the growth of the germs of the disease. The paralysis, the albuminuria, the necrosis in the various organs can all be produced at will with these poisons. Here is a diphtheria toxin. This was made by inoculating a flask of alkalin beef tea with a virulent culture of the diphtheria germ. This germ was obtained in December last from a child in Harper Hospital, Detroit. After the flask had been in the incubator, at the body temperature, for several weeks, the germs were killed by the addition of carbolic acid. The beef tea, or as we now call it, toxin, was filtered, first through paper, and then through porcelain. The latter removes all the germs. On testing this, we find that one-tenth c.c., or a large drop, is sufficient to kill a half grown guinea pig within thirty-six hours. Had we cared to study this, as has been done over and over again, we would have given a smaller dose, one sufficient to kill the animal in five or six days. Then had we studied this animal clinically, we would find all the essential phenomena noticed in a fatal case of the disease in a child. We would have the fever, more or less albuminuria, the paralysis, and on section we would find the necrosis.

From such studies, and the like is not true of this disease alone, there is but one conclusion—the toxin is the cause of the fever, the paralysis, the necrosis, the death. I need only mention that when the system is weakened by this poison, it is often preyed on by the pus germs, streptococci, etc., and that these may hasten and modify the uncomplicated disease. This poison, the diphtheria toxin, is produced by the germs of the disease which are generally confined to the upper air passages. The poison is absorbed, and circulating throughout the body produces its harmful effects, it may be, in every organ.

The above being true, it follows that when we have a natural recovery from the disease, the body must in some way dispose of or destroy this poison, and the thought is at once suggested that, knowing the cause of the disease, it may be possible to find an antidote, an anti-toxin, a something which when introduced into the body may destroy, or so aid the cells of the body that they can destroy this poison. Such a substance we have in the antitoxic serum of Behring and Roux. And here may I say, that it was not a happy thought, not a revelation, not a happening, that led Behring to antitoxin. Ever since Pasteur's work in 1880; away back in the ancient history of bacteriology, we have been gradually approaching antitoxin; a fact here, a theory there, step by step, scores of observers aiding in the work, until at last this worker, placing together all that had been done before him, saw how it might be completed. It had been shown: 1, that the disease was due to a toxin circulating in the blood and lymph; 2, that the animal body had more or less power to neutralize, destroy, or dispose of this toxin; 3, that this power varied with the age and species of animal, an older animal or one of a certain species having much more resisting power; 4, by appropriate treatment this poison-destroying or antitoxic power could be increased; 5, that this power could be borrowed by taking the blood, or blood serum of the resistant animal, and loaned to the one with less resistance. These experiments on animals having shown the possibilities in the work, Behring began his work of perfecting the methods. Before it could be applied to the cure of diphtheria in the human being, the poison-destroying or antitoxic power of the blood in the animal used must be enormously increased, so that a small part of its blood serum would be able to neutralize or destroy all the poison produced in an ordinary case of the disease. Again, an animal must be used whose blood serum when introduced into the human circulation would produce little or no ill effects. Again, methods of preserving the serum must be discovered, so that it could be sent wherever needed. Methods for measuring its worth, poison-destroying or antitoxic power must be devised. These difficulties, Behring asserts, were one by one overcome. Various animals were experimented on—rabbits, sheep, goats, cattle, horses. It may be well to note that a satisfactory antitoxin was first worked out for tetanus, not diphtheria. But possibly on account of the infrequency of this disease, together with the fact that almost irreparable damage is done before it can be recognized clinically, and probably still more to the fact that the news was too good to believe, but little attention was given by the profession at large to these results. Not until after the reading of Roux's paper at the International Congress of Hygiene, held in Buda-Pesth, September last, was any very general interest aroused in the subject. Since then the medical journals and even the daily press have been filled with the subject.

I am appointed to-day to summarize for you, if I can, the results of the serum treatment of diphtheria.

The young science bacteriology, has claimed so much, demanded so much of our attention, asked to remake so much of our belief and practice, that when she puts forward a new claim for recognition, a claim

that in all the history of curative medicine has no parallel, many hesitate and say: "Once I was young, but now I am old; never have I known or seen such things. I do not believe."

Let us see. This, now, is a question of facts. It has ceased to be a question of opinion. It is no longer what you or I believe. It is, what are the facts?

With over ten thousand cases treated with this remedy—used by careful, critical, often fault-finding men—probably 80 per cent. of these cases being reported from hospitals, often the diagnosis made by one man, the treatment given by another, and the report made by still another, the larger part of the diagnosis being confirmed by disinterested bacteriologists; with these conditions, I repeat, it is not a question of opinion whether this remedy is, or is not, a success.

Now the question, what are the results? I do not believe it necessary, or appropriate to burden you with the reading of long columns of statistics. I may say that my work has been such as to require me to keep watch of these reports. I have looked with some care over the reports in the leading medical journals in this country, England, Germany and France. It is well within bounds to say that an average of all the reports made, shows a reduction in mortality of over one-half.

The comparative estimates, treatment with serum and treatment by other means come largely from the hospitals. For the most part the death rate with the serum treatment is compared with that immediately preceding its use. But it is noteworthy, that in several cases when the serum was not to be had, or from some cause there was an interruption in its use, *i. e.*, up to a certain date the ordinary treatment, then serum, then the usual treatment, and then again the serum; in every such case that I have noticed, where the serum treatment was interrupted, the death rate rose to the old figures. Virchow reports such an instance, and although his remarks have been widely quoted, I shall repeat them. He says: "Treatment by diphtheria antitoxin was begun last March in the Kaiser and Kaiserin Friedrichs Hospital. In June and July nearly all diphtheria cases were treated with the serum. The results were as follows: in eight weeks sixty-three cases were treated, with a mortality of less than 13 per cent. Suddenly the supply of serum ceased, as, unfortunately, the very horses from which the serum was taken died. The old methods of diphtheria treatment had again to be resorted to, and the results were, in the next seven weeks 109 cases treated with 55 deaths, a mortality of over 50 per cent. This sad increase in the mortality induced the hospital to return to the serum. Immediately there was a change. In the next six weeks eighty-four cases were treated with a mortality of less than 15 per cent." The total figures he gives are as follows: five hundred and thirty-three cases were treated; 303 with the serum, with a death rate of 13.2 per cent.; 230 without serum with a death rate of 47.8 per cent. Virchow continued, that in view of the results, he held it to be the duty of every doctor to use the serum. "All theoretical considerations," he added, "must give way to the brute force of these figures." Further, he says that even if disagreeable by-effects were proved to occur here and there, they were not sufficient to dissuade him from continuing the treatment.

Roux reports that in one Paris hospital the mortality for four years was 51.71 per cent. In the six months since antitoxin was used, 448 cases gave 24 per cent. mortality, and during the same six months, in another hospital in the same city where serum was not used, 60 per cent. died.

I could, if needed, cite a number of reports fully as favorable as these. I wish you to note that these reports effectually answer the statement that has been made, that diphtheria has been a very mild disease the past year, since the advent of serum-therapy, and yet in Virchow's report the mortality with the old treatment was 47.8 per cent. In the Trousseau Hospital in Paris, 60 per cent.

	Cases.	Albuminuria. Per cent.	Nephritis. (Clinical.) Per Cent.	Nephritis. (P. M.) Per cent.	Deaths. Per cent.
Without serum..	993	42.00	25.78	16.31	43.2
With serum . . .	525	40.95	12.57	15.80	15.8

I want to call your attention to the above table. This is taken from a very recent report or book of 336 pages on the serum treatment of diphtheria, by Dr. Baginsky, Professor of Diseases of Children in the University of Berlin, and Director of the Royal Hospital for Children, in Berlin. This is one of the largest and best equipped children's hospitals in the world. Baginsky discusses at length the influence of the serum treatment on the complications and sequelæ of diphtheria. In his opinion the injection of serum does not increase the frequency of nephritis. Cardiac collapse occurred in 10.9 per cent. of those treated without serum, and in 5.69 per cent of those treated with it. He finds little difference in regard to the frequency of diphtherial paralysis, but such difference as there was is in favor of the serum treatment, the percentages being 6.8 without and 5.14 with the serum.

One more set of figures and I am through with statistics. Dr. Foster, of Washington, in February last tabulated the reports of 7,185 cases, collected from all sources. Of these, 4,445 were treated without antitoxin, with a mortality of 45.56 per cent.; 2,740 cases were treated with serum, with a mortality of 18.54 per cent. Of the cases treated with antitoxin, there was not a single death when the treatment was given in the first day of the disease. When it was begun on the second day, the mortality was 2.83 per cent.; begun on the third day, the death rate was 9.99 per cent.; on the fourth, 20 per cent.; on the fifth, 33.33; after the fifth day, 41.38.

These figures seem to establish Behring's prediction that the mortality will not exceed 5 per cent. if the treatment is begun within forty-eight hours after the attack.

It would not be fair to you, gentlemen, if I did not remind you that there have been a few men who have questioned the efficacy of the serum treatment. It was in reply to an attack made by his own assistant, who denied the efficacy of the serum, that Virchow made the statement I have already quoted. This attitude of Virchow is the more noteworthy, since as you are doubtless aware, he has been for years the severest critic, the most persistent fault finder and "doubting Thomas" that the bacteriologists have had to face. But even Virchow was disarmed, and forced to champion the therapy, as he says, "by the brute force of these figures." In this country there have been two adverse reports made in regard to this treatment. One of these was by Dr. Winters, of New

York. He made a sweeping challenge of every claim made for serum-therapy, attacked the statistics and alleged a number of serious after-effects due to the antitoxin. Dr. Winters' opinions were the outcome of his observations in the Willard Parker Hospital. At this distance we can only judge of the facts from the statements made. This report of Dr. Winters was made to the New York Academy of Medicine. In the reports of the meeting, it does not appear that Dr. Winters had a single supporter; on the other hand, Dr. Somerset, who had been connected with the hospital for the past sixteen months, virtually contradicted every conclusion drawn by Dr. Winters. Dr. Biggs showed that over and above every question of opinion, was the fact that since the introduction of antitoxin in Willard Parker Hospital, the mortality had decreased over 10 per cent. He concluded by saying that, "Dr. Winters had shown from the beginning of the antitoxin treatment in the hospital, profound distrust of the method," and then declared that, so far as he knew, there was not a single distinguished clinician, pathologist or bacteriologist in Europe who had not accepted the new treatment of diphtheria as the most important advance in therapeutics in modern times.

The other adverse report comes from Assistant-Surgeon Cordeiro, of the United States Navy.

If there were need and time for such, for every such adverse report I could show you an hundred, from men of as wide experience and with broader training, the finding being, as stated before, a reduction of at least 50 per cent. in the death rate, with no increase in the after-effects of the disease.

In judging of these statistics, I want to ask your attention to one point that has not yet received the consideration it deserves. In the statistics of the treatment of diphtheria under the old methods, it is to be remembered that in nearly all cases the diagnosis was made from the clinical symptoms; while in the larger part of those reported with serum treatment, the diagnosis has been confirmed by bacteriologic examination, and those cases which did not show the germs of diphtheria were not included in the reports—that is to say, speaking generally—the statistics for serum treatment refer to diphtheria, while those for the older methods refer to diphtheria and those diphtheroid conditions which are so often indistinguishable, clinically, from the true disease. That such cases often pass for diphtheria is well shown in the results of the examinations made in the Willard Parker Hospital in New York. These cases were first diagnosed by the health officers, they were then sent to the hospital, and the diagnosis confirmed by the physicians in charge; and yet subsesequent bacteriologic examination in these cases showed that from 30 to 50 per cent. were not diphtheria, but maladies of non-infectious character. During the last six months I have made a bacteriologic study of a number of cases that were called diphtheria; a part of these cases were in private practice, a part from Harper Hospital, Detroit. In less than half of all the cases examined was I able to find the germs of diphtheria. Now, if these diphtheroid cases, cases in which the mortality is much lower than in the true disease, could be excluded from the statistics given for the old methods, as they have very largely been from those given for the serum treatment, we would find a far greater difference in the figures.

The after-effects of antitoxin—urticaria and erythema, in the neighborhood of the locality of the injection—are rather frequent. Widespread urticaria occasionally occurs. Aronson says that these rashes only occur when a new serum is used; that if the serum is kept for some time, none of these effects are to be found. These rashes have occurred much oftener when large doses of a weak serum have been used. Occasionally neuralgic pains have been noticed, particularly in the legs. This may go further, and we have swollen painful joints, and occasionally paralysis.

Dr. Paquin, of St. Louis, who has used the serum of immunized horses for the treatment of tuberculosis, tells me that he has occasionally had these symptoms in some of his patients. A New York observer who used the serum from an untreated healthy mule reported symptoms practically as above. These symptoms, it seems to me, are justly referred to the serum. For the most part the rashes are transitory and, save for the itching, are of no importance. The graver ill-effects are fortunately rare.

A number of workers are endeavoring to isolate the active principle from the serum and it is a reasonable hope that this will soon be accomplished. It is to be remembered that antitoxin has no restorative power. It is only what the name indicates, a poison neutralizing or destroying agent. If this poison has been at work long enough to damage the cells of the kidney, or paralyze the nerves of the leg, antitoxin will not repair them or restore their functions.

If we give an experimental animal 1 milligram of antitoxin and then give it ten times the fatal dose of diphtheria poison or toxin, this will more surely protect it from the effects of the poison than if we give it a thousand times as much antitoxin twenty-four hours after giving the poison.

In tetanus, the dose of antitoxin necessary to save an animal when given some time after the poison, is more than a million times as large as that which will protect it when given before the poison. So in treatment, the clinical evidence goes to show that one drop of the serum given the first day of the disease is of as much value as hundreds of times this amount given on the fifth day.

It is not to be forgotten that for the most part antitoxin has been made and used by unskilled hands, and yet see the results.

In conclusion, it is possible that these figures and these men are all wrong, but if they are right, curative medicine has never before seen such results.

SKIN GRAFT—INCISION TO PREVENT SCARS.

BY CARL BECK, M.D
CHICAGO.

In operations on the face and neck, we are often confronted with the difficult problem, "how to prevent ugly scars." The rules of surgery require extensive incisions, while cosmetic reasons call for the opposite, and even the most exact coaptation will not prevent cicatrices.

It is evident that if we found a method which would enable us to make an ample incision, and leave little or no trace of it, this method would be of great advantage.

After having studied this question theoretically and by experiments I have, in a few instances, made use of a special method. The results, though few as yet,

and not conclusive, are so much encouraging that I venture to publish it.

The method is simple. Contrary to the accepted rule of our technique, the incision is made obliquely to the surface with a razor or a scalpel, one border of the wound forming a broad strip like a Thiersch's graft, then the incision is carried down as deeply as needed. In uniting the wound, the graft is exactly spread out and adapted to the surface from which it was taken.

Small incisions are sealed without suture with collodium, or treated in the usual way of skin grafting.

In large incisions, deep catgut sutures may be employed to close the wound, the graft spread over the same and treated as before stated.

Drainage may be used, but this complicates and endangers the healing.

The same method may be of value in some cases to remove existing cicatrices.

The theoretical consideration, experiments and details will be the subject of a paper in connection with the exhibition of cases.

900 Reliance Building.

CRANIECTOMY—AN IMPROVED TECHNIQUE.

Read at the Meeting of the Tri-State Medical Society, held in St. Louis, April 2, 3 and 4, 1895.

BY A. H. MEISENBACH, M.D.

PROFESSOR OF SURGERY IN THE MARION SIMS COLLEGE OF MEDICINE. ST. LOUIS.

In this paper I do not wish to discuss the rationale of, or the indications for, craniectomy; but wish to limit myself to the description of an operation which differs in its technique from those heretofore described.

Craniectomy may be either linear, circular or irregular in form; may be confined to one or both sides of the cranium, and may be anterior or posterior. The method of performing craniectomy (one-sided linear) employed by most surgeons, is as follows: a large scalp flap is cut so as to expose the entire field of operation on the bone beneath it. The flap has its base at the base of the skull and extends in a curved line along the sagittal suture, beginning at the hair line of the forehead anteriorly to the coronal suture, and extending posteriorly across the lambdoid suture onto the occipital bone. Its upper border runs parallel with the superior longitudinal sinus, and may extend as high on the vault of the cranium as the sagittal suture. The flap includes all the tissues of the scalp and the pericranium. It is important that the incision be firmly made and carried directly down to the skull, making a smooth, clean incision through the pericranium. With a flat periosteal elevator the pericranium is lifted off of the skull and with it the tissues of the scalp. In this manner the bone is bared as far as the base of the scalp flap, which is on a level with the tip of the ear.

With a small-sized trephine an opening is now made on the frontal bone, anterior to the coronal suture and at a safe distance from the superior longitudinal sinus. The trephine opening is the starting point for the next step in the operation, viz., the cutting of a longitudinal strip of bone out of the cranium, three-eighths to one-half inches wide, including both tables, and extending backward from the trephine opening in the frontal bone, across the parietal and on to the occipital, as near to the lateral sinus as is safe. This part of the operation is done with especially devised bone-cutting forceps (Keen's, Lannelongue's, etc.), or the chisel.[1] The bony parts divided are parts of the frontal, the parietal and part of the occipital bone. In skulls in which the tables are soft, or not very thick and moderately ossified, the cutting out of this strip of bone by Keen's or other forceps, may be readily accomplished in a moderate space of time, say one-half hour. In skulls, however, that are thick and hard, the cutting out of the bony strip is not an easy or rapid task.

It is in cases in which the skulls are thick and hard that I have devised the operation which I shall now describe. The instruments required are a scalpel, artery forceps, periosteal elevator, double-bladed saw (see cut), a chisel with a beak (see cut), an ordinary chisel three-eighths inches wide, a mallet and dural elevators (see cut).

Fig. 1.

Fig. 2.

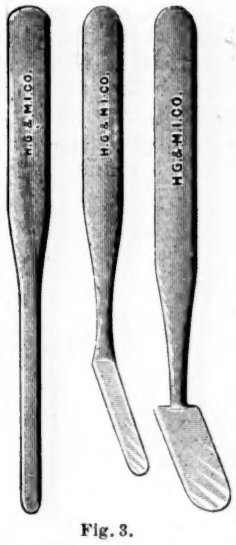


Fig. 3.

Fig. 1, double-bladed saw (author's.) Fig. 2, beaked chisel (author's) Fig. 3, dural elevators (author's).[1]

I make the scalp flap as already described. When the bone is cleared and the flap retracted, a button of bone is taken out of the frontal bone (or elsewhere, according to the operation to be done) with a small-sized trephine. It is in the removal of the bony strip that the improvement in the operation consists. Beginning at the trephine opening with the double-bladed saw, I cut a strip of bone the width of the saw (three-eighths to one-half inch) as far back as indicated. The saw cut is carried through the outer tables, the diploic structure, and onto or into the inner table. The outer table is now cut out by means of the ordinary narrow surgical chisel. The next step in the operation is to cut out the inner table by means of the beaked chisel; with a dural elevator (see cut) the dura is separated from the inner table; separating it step by step, as piece after piece of the inner table is cut out. The beaked chisel is of much service; for, on account of the dull projecting beak, the dura is not injured, as the beak glides over it readily. I hardly need mention that with the ordinary chisel this part of the operation is not free from danger to the dura.

[1] There is no doubt but that the quickest way of opening the skull is with a properly constructed electrical or dental engine, with properly constructed saws. Those devised by Cryor, of Philadelphia, are the best, but they are very expensive and not available outside of large well-equipped hospitals.

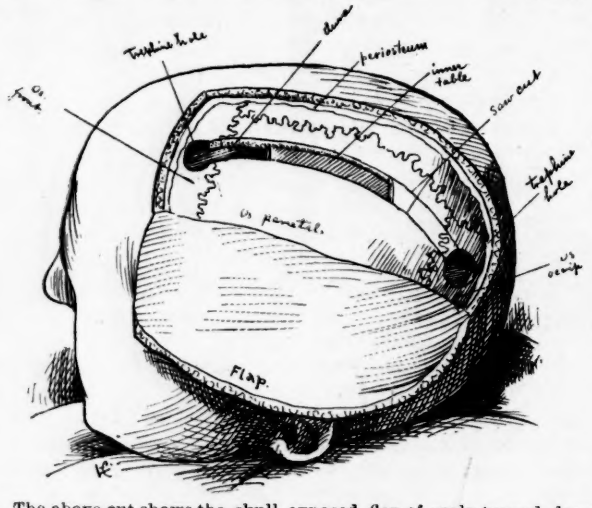
[1] The above instruments were made for me by Holekamp-Moore Instrument Company, St. Louis.

REMARKS.

The double-bladed saw that I use was devised by me some years ago, to cut off plaster-of-Paris casts. It cuts a strip three-eighths of an inch wide. It very much facilitates the operation of craniectomy, as described.

I have found the beaked chisel (my own device) very useful in operations on the skull, especially where the inner table is to be cut through. On account of the blunt beak the dura is not liable to be injured. I have found it very useful also, in cases of depressed fractures where it was necessary to smooth off the sharp projecting edges of the inner table. The chisel is about eight to ten inches long and made of three-eighths to one-half inch octagonal steel; the blunt beak projects one-eighth to one-quarter of an inch beyond the perpendicular edge. The cutting edge is at right angles to the shaft of the chisel, and is one-half to three-quarters of an inch long. The chisel has a curve so that the contour of the cranium can be easily followed.

I am well aware that many surgeons deprecate the use of the chisel in operations on the cranium, for fear of the resulting concussion of the brain. This seems to me to depend, in a measure, on the skill of the operator, and also on the character of the chisel used. It is a noticeable fact that most chisels made by instrument makers are improper



The above cut shows the skull exposed, flap of scalp turned down, and the different stages of the operation on the cranium.

tools, being too short and also too light for proper manipulation. In my estimation, the best chisel for surgical purposes generally is the carpenter's or joiner's socket-framing or firming chisel, into the socket of which a metal knob has been fitted to receive the mallet blows. It seems to me that with a chisel of this form (or any other long heavy chisel) the concussion of the brain is much less than where a short light chisel is used. Surgery is mechanical in part, and the surgeon can learn many important technical lessons from the skilled craftsman in the workshop. A skilled sculptor or mechanic would not think of using a tool so short that he would continually run the risk of pounding his fingers; for, certainly, the fear of hitting the fingers would detract materially from the delicacy in execution of the work to be done. How often do we see improper instruments used in surgery, and, if bad results follow, the blame laid to other causes than to the execution of the operation? The old saw is true, "a good mechanic needs but few tools;" and I would add that they must be of "proper construction and properly used."

I should be loth to present for your consideration a procedure that I had not tested, both on the cadaver and on the living. On the cadaver, I have cut out the bone, as described, within twelve to fifteen minutes.

Within the last year I had the opportunity to execute the operation on two cases.[2] The first, a modified linear craniectomy in a child 7 years old, for ossification of the cranium and defective development of the brain; the second, a metastatic tumor of the cranium (carcinoma), in a woman, age 56, in which I removed the tumor with the same instruments, double-bladed saw, trephine and beaked chisel. In this case the bone (and tumor) excised was rectangular, measuring about two inches square. In both cases there were no untoward symptoms, as far as the operation was concerned, viz., concussion from the use of the chisel. I refrain from reporting these cases *in extenso* at this time, as I shall incorporate them in a future paper.

2229 South Broadway.

SOCIETY PROCEEDINGS.

The Ohio State Medical Society.

Annual Meeting held at Columbus, May 15, 16 and 17, 1895.

(*Concluded from page 328.*)

DR. W. J. MEANS, of Columbus, Ohio, presented a paper on

INFLAMMATORY DISEASES OF THE CERVICAL LYMPHATIC GLANDS.

After outlining the topographical anatomy of the neck, and calling attention to the important and intimate relations of the various structures, Dr. Means continued:

The inflammatory diseases of the cervical lymphatic glands in their general features are so well understood that I will not devote much space to a description. Since the management of the different forms is in many instances so radically different, I am compelled, however, to give a classification and a short clinical history of each.

The most practical grand divisions are simple and specific. The simple variety is met with in children perhaps oftener than most any other disease. In severity, simple adenitis exists from the evanescent swelling of the glands that passes off in a few days, to that of suppuration or chronic enlargement that continues for weeks, causes the patient much trouble and is liable to become specific from secondary infection. The etiologic factors are numerous. Inflammatory processes about the mouth, face, head and ears, such as ulceration of a tooth, stomatitis, tonsillitis or any of the diseases of mucous membranes, eczema of the face or scalp, dermatitis, otitis media, pediculosis capitas and other diseases too numerous to mention are frequent causes. The eruption of the teeth, exposure to cold and sprains are all common causes in producing swelling of the cervical glands.

The pathologic changes that take place are first found in the cortex of the gland. It becomes more vascular, soft and swollen; the reticulum loses its distinctiveness, the lymph passages become packed with lymph. The capillaries become enlarged and the gland becomes a deep purple in color. The termination may be by resolution, chronic enlargement or suppuration. Owing to the inherent power of the glands to throw off foreign bodies and to resist the attacks of invading microbes, a large proportion of them undergo resolution and disappear. When the inflammation becomes chronic there is a failure to absorb the exudates and they become organized. This thickens the capsule and it becomes hard and adherent to the surrounding tissues. In some cases the lymphatic vessels are compressed and there follows dilatation of them and edema of the parts. If the termination is by suppuration, the gland itself will be the seat of necrosis,

[2] Since the writing of this paper I have performed two additional craniectomies after the method herein described. In both cases the results were perfect, as far as the operation is concerned. No shock; union per primam intentionem.

or the tissues surrounding it. If the latter, the gland is often found partially intact in the abscess.

There is always danger of a simple adenitis becoming tubercular. A healthy gland has a resisting power to the growth of tubercle bacilli, but when diseased it very readily becomes a nidus for their cultivation. I do not believe the profession is fully alive to the danger of this source of tubercular infection. Enlarged glands are so frequent and terminate favorably in so many cases that the physician becomes indifferent to the gravity of them.

Under the specific inflammatory enlargements we have tubercular, syphilitic and glanderous and a few others. It is now a well established fact that the lymphatic glands all over the body are frequently affected by tuberculosis. The cervical glands are especially prone to be affected, probably owing to the numerous sources of infection about the mouth, face and head. It is claimed that 95 per cent. of all the cases of tubercular adenitis occur in the cervical lymphatic glands. The source of infection is much the same as in the simple variety. There is some abrasion or disintegration of the skin or mucous membrane through which the bacilli gain entrance to the lymphatic vessels and are carried to the gland. The bacillus tuberculosis is non-motile, so this is the only explanation we can give of its entrance and progress. Another clinical fact goes to prove this, in that when a gland becomes infected, belonging to the superficial set, others in the same chain become affected. It is so with the deep set. This is the most conclusive evidence that the bacilli are carried by the lymph current. In the active stage of the inflammatory process the lymph vessels are sometimes occluded and thus prevent the extension of tubercular infection for the time being. There are some exceptions to this rule of invasion in the direction of the lymph current. These exceptions may be accounted for by the wandering leucocytes, to which the bacilli may become attached.

We may note another clinical feature that bears upon the above theory, that as long as the bacilli are confined to the lymphatic glands there is no danger of general infection, but when they pass these filters and the germ gets into the general circulation there follows general tuberculosis, generally pulmonary. For an extended description of the pathologic anatomy I will refer the reader to the works on that subject. Suffice it to say that cell necrosis is followed by caseation, and the bacilli within these nodules die or become inert and remain frequently for months or years without any signs of activity. During this time the gland is not tender and remains quiescent and gives the patient no particular trouble. The cheesy material may dry and become inclosed in the capsule or connective tissue and remain in calcification, or it may undergo liquifaction.

Secondary infection may take place from pus microbes when an acute inflammatory process will set up, involving the surrounding tissues, followed by suppuration. When a group of glands are diseased the first infected may have undergone the degenerative process above mentioned while the last ones are simply pinkish and only show the primary stage of the disease. I recently removed eighteen axillary glands from a patient where they ranged in size from a walnut to that of a small almond. They were knotted together by connective tissue and the larger ones had undergone the cheesy degeneration. Liquefaction had not taken place in any of them. Several of them had a few foci of necrotic degeneration, and the smaller ones did not present any changes further than the hyperemic enlargement.

In simple adenitis there is difficulty oftentimes to differentiate the true condition. Suppurative adenitis is an acute inflammatory process that terminates in a few days in pus. Adenitis developing from a sore about the lips, that has the characteristic of a sore, can be easily differentiated from the simple or tubercular varieties.

In tertiary syphilis, the whole glandular system, especially the superficial set, is affected. The affected glands are painless, indurated and loose in the tissues. Carcinoma never occurs as a primary affection of the lymphatic glands. When enlargement of glands occurs close to a suspicious tumor, there is not much doubt as to its character. Lymphoma always affects but one and the cause is benign.

Lympho-sarcoma gives rise to regional and general infections. In this respect it is like tubercular adenitis, but it is not inflammatory and therefore does not produce degeneration of the tissues. A prognosis of inflammation of the cervical glands depends largely upon the variety and the management. If left to themselves or treated in an improper manner, they become a frequent cause of death. Simple adenitis *per se*, is not dangerous, but when we consider the danger of secondary infection from tuberculosis, it becomes a grave disease. Local tuberculosis is a constant menace to the life of the patient, and therefore the gravity of tubercular adenitis in the cervical glands especially should be recognized. General infection may not occur, but the disease remains there with the wand of death, ready to beckon its victim.

The treatment of cervical adenitis after a careful diagnosis has been made is important. In the simple variety much can be done to avoid suppuration and secondary infection. One of the cardinal principles in treating adenitis, of whatever kind, is to remove the cause or source of the trouble. When called to see a patient with enlarged cervical glands, it is the imperative duty on the part of the physician to carefully examine the mouth, throat, nose, ears and scalp to find the cause of the trouble; and if found, it should be removed. Rest and the application of cold to the swollen glands is about the only treatment necessary following the removal of the cause. I wish here to protest against the almost universal custom of applying local irritants over swollen glands. I also protest against the indiscriminate use of fomentations. The ancient theory that iodin applied externally causes absorption of exudates or will reduce enlarged glands, seems to be prevalent among physicians of the present day. The external use of tincture of iodin is unsightly, painful, and may be injurious. Local irritants stimulate the peri-cellular tissues to a vascular hyperemia and thus may convert a quiescent enlarged gland into an acute inflammatory section and possible suppuration.

Another source of danger may arise from abrasion of the skin so that microbes may find their way into the lymph currents and diseased gland. These restrictions on the use of irritants apply both to the simple and specific varieties. When suppuration has taken place, fomentations may take the place of the cold applications. As soon as fluctuation can be detected, a free incision should be made into the pus cavity. The patient should be anesthetized, and then the abscess can be opened carefully and thoroughly cleaned out. By "cleaning out" I mean curetting and washing with antiseptic solution and then packing with iodoform gauze. If this plan can be followed there will be a speedy recovery with the least possible drain upon the system and resulting scar. Constitutional treatment is necessary to support the system. I depend upon the lime salts, arsenic and iron. If the suppuration is found to be in the peri-glandular tissues and the gland not fully broken down, which is often the case, it should be removed and the cavity treated in the above manner. The treatment of the tubercular variety is one of the most interesting and important subjects pertaining to the management of the lymphatic glands. The treatment very naturally resolves itself into two forms—constitutional and local or surgical. Under the constitutional treatment there lurks much danger to the patient. The old idea of the effect of the alterative treatment in scrofula is still abroad in the profession. No one knows what it means, but through ignorance of the action of drugs and the pathology of tubercular adenitis, the physician goes on prescribing nauseating medicines, hoping thereby to cure these local swellings, but his patient goes on toward the grave, or a return to health, after months or years of running sores and resulting hideous scars. The true purpose of constitutional treatment is, or should be, to build up the system. This can best be accomplished with cod-liver oil (pure); (emulsions should be discarded), arsenic, iron, nutritious diet and proper hygienic surroundings.

The curative treatment is surgical and should be resorted to at the earliest possible time. On general principles there are no good reasons for delay. Early extirpation of tubercular glands affords as great immunity from subsequent infection as it does in carcinoma. In the face of modern statistics, no one would advise delay in removing a malignant tumor before the surrounding tissues and glands become infected. So it is with tubercular lymphatic glands; if left alone, additional glands become infected; there is constant danger of general infection and there will be more or less peri-cellulitis, thus complicating operative interference, and other complications will arise that will make what primarily would have been a simple surgical operation, one of the most formidable known to surgery, thus jeopardizing the life of the patient.

The surgeon must be thoroughly familiar with the topographical arrangement of the tissues and organs of the neck before he ventures to operate, and he must be prepared to meet emergencies of the gravest character. Exercising all the skill and care possible, he will meet with difficulties that will require mature judgment to overcome. I have found it necessary to ligate the jugular vein in two cases, and the

external artery in one. These cases presented no unusual features, except that the enlarged glands were closely adhered to the vessels by adhesions caused from peri-cellulitis, and could not be diagnosed before the incision was made. In the posterior triangle of the neck, if a tumor is large and with a tendency to grow downward, there is a considerable danger from direct infection through the apex of the lung. In one case, operated about three years ago, the gland had become quite large and pressed upon the lung in such a way as to produce a severe cough. The tumor was found to be attached to the pleura and subclavian artery and the several cords of the brachial plexus. A subsidence of the cough followed the removal of the tumor, what seemed to be an incipient tuberculosis was fully arrested, and the patient now enjoys perfect health.

There are some important points in the technique of these operations, that should be closely observed:

1. The incision through the integument should be large enough to expose the glands to be removed. By adhering to this rule, many of the accidents referred to will be obviated.

2. Never use a cutting instrument if it is possible to avoid it. One of the best instruments for the purpose is the plain curved scissors; the concavity fits nicely over the surface of the tumor and reduces the danger of injury to either the cyst or blood vessels to a minimum. The finger is also an efficient and intelligent dissector, to be used in preference to any other instrument, if space will admit of it.

3. If suppuration has taken place, the sac should be thoroughly curetted, removing if possible all the diseased tissues, and have the exposed surfaces wiped out with pure carbolic acid and then packed with iodoform gauze. There should be no effort to close the incision by sutures. Tubercle bacilli do not flourish in a dry place; therefore, the wound should be kept as free from secretions as possible. The dressings should be changed every second or third day.

4. If suppuration has not taken place and the glands can be removed without bursting the sac, the incision can be closed up without drainage.

5. It is highly necessary to remove all the glands that can be found in the region infected. The operator will often be surprised at the number affected, when he comes to make an examination directly through the wound. One small gland left, if infected, will defeat the result of the operation.

CONCLUSIONS.

1. Inflammatory diseases of the cervical lymphatic glands are frequent, and a common source of grave complications.

2. Simple adenitis should receive careful and prompt attention from the physician.

3. Constitutional treatment has no direct influence on these enlarged glands.

4. Irritating local applications are unsightly, painful and a frequent source of secondary infection from pathogenic microbes.

5. The tubercular form frequently leads to general tuberculosis and death, or chronic suppurating sinuses, that continue for years and eventually leave disfiguring scars.

6. The early removal of chronically enlarged glands or tubercular glands is followed by a greater immunity from a return than is the early removal of carcinoma.

7. The operation should be thorough, removing all the glands in the plexus that can be found.

SELECTIONS.

Significance of the Lotfler Bacillus in Apparently Healthy Individuals.—Dr. P. Aaser, Christiana, relates in the *Deutsche Medicinische Wochenschrift* of May 30, 1895, that in the middle of June, 1894, a severe case of diphtheria occurred in certain cavalry barracks. The patient was removed to a hospital, the room was disinfected with soap and water and a 5 per cent. carbolic solution, and his clothing subjected to steam at 110 degrees C. June 20 and July 2, two other cases were found. They were isolated and the room again disinfected. Yet August 1 a fresh case appeared. All the men were then quartered in another room, fresh clothing furnished, then all the rooms were painted. The infected clothing was steamed each time. In spite of this, September 21 a case was discovered. At this point the suggestion was made to immunize all by antitoxin; lack of material prevented. But all in the barracks were then subjected to bacteriologic examination, and out of eighty-nine persons, cultures of Löffler bacilli were obtained from the throats of seventeen. Here was a possible source for the spread of the disease. The seventeen suspects were at once isolated. On the next day one severe case of diphtheria developed and later two cases of tonsillitis. The health of the remainder was undisturbed apparently, but in each the mucous membrane of the throat was reddened and this persisted until it was no longer possible to demonstrate diphtheria bacilli, some three or four weeks. Dr. Aasen has made investigations of this sort several times. In another instance a case of diphtheria developed in a scarlet fever pavilion. Examination showed bacilli of diphtheria in 20 per cent. of the children. Antitoxin was used in all. Nearly a month later one of these children, in whom the latest examination developed only very few bacilli, was allowed to go home. A few days only elapsed before two younger sisters were brought to the hospital with diphtheria. All other chances for this infection were eliminated.

An Unusual Source of Lead-Poisoning.—During my term of residence in the Manchester Royal Infirmary as house physician, a man (P. N.), 27 years of age, was brought to the accident room one day, as a case of acute intestinal obstruction, for immediate operation. As no very urgent symptoms were apparent, he was admitted to the medical wards, under Dr. Steell, to be under observation. The following morning the discovery of a very well-marked blue line on the gums cleared up the case, the diagnosis being lead-poisoning, with colic and constipation. The patient was pale, anemic and rather nervous in manner; he complained of severe pain in the abdomen, chiefly referred to the umbilical region, relieved somewhat on pressure. There was a history of constipation for some days, but the bowels were moved on the day following admission.

The patient rapidly improved under the administration of potassium iodid; colic and constipation disappeared, and he left the infirmary in nine days, feeling perfectly well. There were no signs of neuritis, except occasionally feeling of pins and needles in the feet, and numbness and coldness of the hands on washing with cold water. Knee jerks and plantar reflex, wrist jerks and triceps reaction were all readily obtained.

At first, no clue could be perceived as to the source of the lead in this case. The patient stated that he was a worker in a rubber factory, and questioning ultimately brought out the fact that he had been for some time in the habit of chewing portions of the soft unfinished rubber. He believed white lead and red lead were used in the process of manufacture of the rubber, but had not to handle these himself. He was asked to bring a specimen of the material he had been in the habit of chewing, and it turned out to be in the form of thin sheets of brownish-red rubber, about one-sixteenth of an inch thick.

On incinerating the rubber, much residue remained, which, disolved in nitric acid, gave very abundantly the characteristic reactions for lead. When opportunity offered I made a more systematic examination, with the following results: the specific gravity of the rubber was 1.647, while, according to "Thorpe's Dictionary of Applied Chemistry," the specific gravity of pure caoutchouc is 0.925. A piece of the rubber 1 inch long and a half inch wide weighed about 13 grains, and on ignition and incineration left 51.55 per cent. of residue, consisting chiefly of sulphate and carbonate of lead, with iron, etc. Quantitative analysis revealed the presence of 23.57 per cent. of lead, calculated as metallic lead (Pb), which would correspond to 29.44 per cent. of white lead, calculated as $2PbCo_3+PbH_2O_2$, or 27.62 per cent. red lead, calculated as Pb_3O_4. This comparatively enormous quantity of lead would easily account for the symptoms of poisoning following the chewing of the rubber material. The patient was seen about twelve months after he had left the Infirmary, and was then enjoying good health, but he still complained of weakness and cramps in his fingers after they had been in cold water.

I have to thank Dr. Steell for kind permission to report this case, which may be of some interest as pointing out a possible source of lead poisoning which I believe has not been hitherto suspected.—By FRANCIS J. H. COUTTS, M.B., F. C.S., in *The Druggists Circular*, July, 1895.

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SATURDAY, AUGUST 31, 1895.

THE VENOM OF SERPENTS.

From the childhood of the world, serpents have been objects of great interest to mankind, regarded with awe and worshiped. Indeed snake worship is to be found even at the present time and in our own country, as witness the "snake dance" of the Moqui Indians of Arizona. The fact that these animals can progress rapidly over the ground, climb trees and swim through the water without limbs probably accounts for some of the interest manifested in them; but it is as agencies of terrible death that they exert a peculiar fascination. Animals, the bites of whose insignificant fangs will cause the death of even "My Lord, the Elephant" in two hours, are surely of more than ordinary interest. It is their poisonous qualities, then, that most concern the medical man, since about one-third the known species of snakes are poisonous, and the mortality from snake bites amounts to several thousand a year—20,000 per annum in India alone—FAYRER. Even in France and Switzerland, of 433 persons bitten in twenty years by the European viper, 61 died, and in Germany the mortality of those bitten is 25 per cent.

A serpent's mouth is provided with three groups of glands; one, the inferior labial, is under the lower lip; another, the sublingual, under the tongue; the third the superior labial, in the cul-de-sac of the upper lip. From this last, in the venomous serpents alone is found a prolongation backward on each side, the glandula venenata, which secretes the poison and is of a whitish-yellow, contrasting with the rosy color of the ordinary glands. The venom glands differ in size in different species, but all agree in having a reservoir, in which the venom may be stored for use, and a duct leading to the base of each fang. In the group of serpents containing the cobra da capello the fangs are permanently erect and fastened to the maxilla; in another, represented by our rattlesnakes, the fangs are depressed and can be raised by muscular contraction which turns the maxillæ and elevates the quadrate bones thus carrying the mandible away from the upper jaw and preventing the snake from biting itself. Rattlesnakes shed their fangs periodically and the small imperfect teeth in the back of the mouth move forward to be developed into the fangs, somewhat as in the sharks.

The chemic composition and physiologic action of snake venom seem to vary but little in different species and is practically identical, save for the intensity of its toxic effects. Fresh venom is a viscid, nearly tasteless fluid, ranging from light yellow to amber or even greenish-yellow in color and occasionally colorless; the specific gravity is from 1030 to 1046 and the reaction is acid. It sometimes happens that the alkalin secretion of the ordinary salivary glands is mixed with it, when it becomes neutral. When dried, venom presents itself as small, brilliant, yellowish-brown scales. Fresh or dried, it dissolves easily in hot or cold water, glycerin and dilute alcohol; it is insoluble and immediately precipitated in absolute alcohol, ether, ammonia, oils, etc.[1] In the dried state or in solution it seems to keep indefinitely. DR. WEIR MITCHELL kept a glycerin solution unchanged for twenty years.

As the venom gland is the homologue of a salivary gland, it is interesting to note that the earlier writers looked upon the venom as the saliva of serpents. In 1881 GAUTHIER announced that "the venom of serpents appears to me to differ from our saliva only in the intensity of its effects." This author and STERNBERG have been able to cause death in rabbits and pigeons by injecting human saliva. The chemic construction of ptyalin is very similar to that of venom, as may be seen from the following analysis:

	C.	H.	N.	Ash.
Ptyalin (Hüfner)	43.1	7.75	11.86	6.1
Cobra venom (Armstrong) . .	43.4	7.	12.45	traces.

The chemic composition of serpent venom seems to have been investigated for the first time in 1845 by PRINCE LUCIEN BONAPARTE. In 1886 WEIR MITCHELL and REICHERT[2] succeeded in extracting from cobra and rattlesnake venom, three substances with which they experimented on pigeons. These were: (*a*) peptone venom, but feebly active; (*b*) globulin venom, very active; (*c*) albumin venom, inactive. In the same year WOLFENDEN, in communicating the results of his studies of cobra venom, stated that he found four toxalbumins, to which he gave the names of globulin, serin, acid albumin and peptone. The

[1] Roux; Province Medicale, No. 13, 1895.
[2] Researches upon the Venoms of Poisonous Serpents.

last one is inactive and inconstant; the globulin is the most abundant and most active; and is an asphyxiant and paralyzant; the acid albumin has similar properties and the serin kills by ascending medullary paralysis. Lately PHISALIX and BERTRAND,[3] investigating the venom of vipers, have separated a phlogogenous substance analogous to some diastases, and to which they give the name of *echidnose;* and a substance which they call *echidnotoxin*, having a systemic action capable of causing death by itself, acting violently on the nervous system—vasomotor disturbances. These authors brought venom to the boiling point for 20 to 25 seconds; it was then quickly cooled, when it was found that the local effects—caused by their *echidnose*—did not appear, while the general effects, due to their *echidnotoxin*, persisted and caused death, thus confirming KAUFMANN'S opinion, 1890: "Venom probably contains two sorts of active principles, one producing local, the other general effects; the former is surely destroyed by permanganate of potash or chromic acid, while the toxicity of the other is only attenuated."

The amount of venom furnished by serpents varies with the species; *e. g.*, the European viper furnishes about .15 ctgm., the rattlesmake 1 gr. .50, the cobra 1 gr. .20 and even as much as 3 gms. in a very large specimen. CALMETTE has investigated the question of relative toxicity by experiments with the venom of serpents from different parts of the globe. Fresh venom was used from the cobra da capello, the rattlesnake, the fer-de-lance, the asp and the horned viper, and dried venom from five other species. All these venoms naturally present very different degrees of toxicity, but a more interesting fact is that the secretion of the same serpent varies in considerable proportions, according to the length of time it has fasted and, perhaps, other conditions at present unknown. M. CALMETTE kept an Egyptian asp for eight months during which period it refused all nourishment. When it first arrived, venom collected in a watch glass and dried in vacuo killed a rabbit weighing 1700 gr. in four hours in the dose of 0 mg. 7; at the end of eight months and before the animal's death, a rabbit of nearly 2 kilos weight was killed by 0 mg.1. The same experiments were made on a cobra with similar results. A cobra which has not bitten anything for at least two months may furnish 220 milligrams of venom.[4]

Warm-blooded animals are more easily affected by snake venom—birds, especially, dying very rapidly; the bite of a large cobra is fatal to a fowl in one minute. Cold-blooded animals succumb less rapidly. It is interesting to note that in sea snakes, which are very poisonous and which live on fish, the venom has such a paralyzing effect that the fish die with the spiny fins depressed, thus allowing them to be swallowed. The size of an animal seems to bear some relation to the fatal dose; for example, the bite of *Ophiophagus Elaps* of India and Burmah, the most poisonous serpent known, is fatal to man in three minutes, to an elephant in two hours. On the other hand, cats can resist a given quantity of the venom as long as dogs several times their size. CALMETTE[5] has made some interesting studies in this direction, which he sums up as follows:

Serpent experiments.	Fatal dose in 45 minutes for a rabbit of 1 k. 600 to 2 k.	Fatal dose in 40 minutes for a guinea pig of 450 to 500 gms.
Cobra No. 1	0.5 milligr.	0.05 milligr.
Cobra No. 2	0.6 "	. .
Cobra No. 3	0.3 "	. .
Horned viper No. 4	0.7 "	0.07 "
Horned viper No. 5	0.3 "	. .
Horned viper No. 6	0.6 "	. .
Asp No. 7	1.5 "	0.1 "
Asp No. 8	2 "	. .
Rattlesnake No. 9.	3.5 "	0.3 "
Banana snake No. 10	2.15 "	0.2 "
Broad-headed snake No. 11	2.5 "	. .
Death adder No. 12	1. "	0.08

"We see from this table," says CALMETTE, "that the respective resistances of the rabbit and guinea pig are in nowise proportioned to the animal's weight; thus, to kill 500 grams of rabbit, it took nearly twice as much venom as to kill 500 grams of guinea pig. The same held true of dogs; it took 6 mgs. of cobra venom No. 1 to kill a dog of 7 kilos in twelve hours, while the same quantity would kill twelve rabbits in three hours."

The principal cause of death after snake bite is paralysis of the heart or respiratory centers; cobra venom first irritates, then depresses, the respiratory center. Changes in the blood, though profound are not the cause, for, as BRENNING points out,[6] frogs whose blood has been replaced by a 0.07 per cent. solution of sodium chlorid, have the same symptoms.

Therapeutic efforts for the relief of snake bite have been almost as numerous as the sands of the sea for number; they vary from the savage's invocation of his fetich, through amputation of the part and other heroic measures, to the resources of our modern materia medica.

The temperature limit at which the toxic power of venom is annihilated is from 80 to 100 degrees Centigrade. Heating to 38 degrees Centigrade for fifteen hours has no effect on the virulence. Carbolic acid, bichlorid of mercury (1 to 1000), sulphate of copper, nitrate of silver, iodin, alcohol have no action, either *in vitro* or in the organism, even if injected at the same time as the poison. Permanganate of potash, introduced by LACERDI of Rio de Janeiro in 1881, seems to neutralize the poison when mixed with ten parts of a 1 per cent. solution to one part of the venom. Chromic acid was recommended in 1888 by KAUFMANN. In 1891 CALMETTE endeavored to ascertain the real value of the permanganate and demonstrated that it is an excellent antidote—provided

[3] Soc. de Biologie, Feb. 10, 1894.
[4] Gaz. Med. de l'Algerie, No. 10, 1895.
[5] Loc. cit.
[6] Die Vergiftung bei Schlaugen, 1895.

that it is exhibited immediately after the bite or experimental punctures and through the same openings. These conditions preclude it having much practical value. From theoretical considerations he was led to use chlorid of gold, and announced that this agent, "in sufficient quantities—ten drops of a 1 per cent. solution to one drop of the venom—injected into the tissues of an animal inoculated with a mortal dose of cobra venom, even away from the point of inoculation, prevents intoxication when done before symptoms of bulbar asphyxia are manifested."

This author, who is Director of the Bacteriological Laboratory at Saigon, Cochin China, also undertook experiments in order to produce artificial immunity. Three different methods were used: 1, successive inoculations of heated venom, then of virulent venom; 2, injection of mixtures of virulent venom with permanganate of potash or chlorid of gold; 3, ingestion of increasing doses of virulent venom. These results were absolutely negative at first, but during the course of his researches covering a period of some two years, he discovered that chlorid of calcium is the best chemic agent to use. For the immediate treatment of the wound a one-twelfth solution of the salt is preferable, diluted at the moment of use to one thirty-sixth; 20 to 30 c. c. of this dilute solution are injected into the wound direct and for a considerable distance around it. This substance, like the other alkalin hypochlorites, seems to owe its efficiency, without injurious action on the tissues, to the liberation of hydrochlorous acid. Two cases have been recently reported of successful results from this treatment following bites by the brown-banded snake of Australia, the most dangerous reptile of that country.

In 1888 F. A. PERROUX, of Calcutta, addressed a "confidential memorandum" to the Department of State in which it was asserted, with much circumstantiality of detail, that "Asiatic cholera is certainly cured by the inoculation of cobra venom," and that this inoculation is practiced only in India where it is "jealously guarded as a precious secret" by the few who are familiar with it. This memorandum was referred through the Secretary of the Treasury to DR. JOHN B. HAMILTON, then Surgeon-General of the U. S. Marine-Hospital Service, who, while pointing out the inherent improbability of the claim, agreed to submit the cobra poison, if a specimen could be obtained, to an investigation as to its germicidal property by application to the different bacteria and especially to the comma bacillus. Two collections of the venom—one from four and the other from fourteen live cobras—being received from MR. PERROUX, they were exhaustively experimented upon by Assistant Surgeon J. J. KINYOUN at the U. S. Marine-Hospital Laboratory in New York harbor. The conclusions drawn from DR. KINYOUN'S elaborate report to Surgeon-General HAMILTON, and indorsed by the latter, are: 1, cobra venom is germicidal to the cholera spirillum in a three-fourths per cent. solution; 2, there is no antagonism between the cobra venom and the poison (toxin) of the spirillum of cholera; 3, the venom does not prevent the coagulation of blood; 4, when the two poisons are administered together, or the cholera poison followed by the cobra venom, the toxic effects of cholera are intensified.[7]

In the latter part of 1893 MM. PHISALIX and BERTRAND created a new epoch in the history of serpent venoms by their announcement to the Paris Biological Society that their researches show that there exist in viper's blood, principles similar to venom, with great physiologic activity—2 c.c. of its serum being capable of killing a guinea pig of 480 grams, and that this is to be considered as the reason for the immunity of the viper to its own venom. In February, 1894, they announced that by heating viper venom with certain precautions, they gave it certain vaccinal properties and transformed it into *echidno-vaccin*. This does not confer immediate immunity—it takes a certain length of time, during which the echidno-vaccin leads to the formation of an antitoxic substance in the blood, capable of attenuating or even completely neutralizing the toxic properties of the venom. Thus, while 0 mgm. .3 of venom, diluted with 3 c.c. of serum from an animal previously inoculated, injected into a guinea pig of 380 gms. only caused some insignificant symptoms which rapidly disappeared, 0 mgm. .15 of normal venom kills a guinea pig of 500 gms. in less than twelve hours.

At the same meeting of the Biological Society CALMETTE also announced a means of securing immunity against snake-bite which, according to this author, may be accomplished in four ways: 1, by the use of increasing doses of diluted venom—not recommended; 2, by the use of large doses of the venom followed by chlorid of calcium or the alkalin hypochlorites; 3, by repeated injections of mixtures of mortal doses of venom with decreasing doses of gold chlorid or, better of hypochlorite of calcium or soda; 4, by injections of 6 to 8 c.c. of hypochlorite of calcium to one-sixtieth, repeated four or five days in succession—rabbits are thus rendered insusceptible to twice the fatal dose,

FRASER[8] has confirmed these ideas of immunity very recently, and it seems that fresh triumphs are in store for serotherapy. It is probable as ROUX[9] suggests, that the serum of animals which seem to be naturally immune, such as the hog and the hedgehog, will be productive of even better results.

[7] Report on the Antagonism between the Venom of the Cobra and the Poison of the Cholera Spirillum. Operations of the United States Marine-Hospital Service. 1890, pp. 13–17.

[8] JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, July 6, 1895.

[9] La Province Medicale, No. 16, 1895. The writer is greatly indebted to Roux's articles in La Province.

MEDICAL SUPERINTENDENTS FOR PUBLIC INSTITUTIONS.

A daily Chicago paper, editorially commenting upon a proposed reform of the medical institutions of the county, gives utterance to the following: "The medical profession ought to be debarred from the business management of every public institution and every public department, but it should be made supreme in the medical portion of each public institution and every public department requiring its coöperation."

The first part of this quotation is the expression of a delusion that has apparently a strong hold of the professional politician, whose business capacities are not, to judge by the usual results of his administration of public affairs, the most brilliant; and the second part is theoretically and practically an absolute negation of the first.

How is the medical profession to be debarred from all part in the business management of an institution or department and yet be made supreme in the medical portion of every department requiring its coöperation? Experience has not demonstrated the success of divided authority in medical establishments and hospitals, and their exclusive lay management has everywhere and at all times made a record of maladministration and abuse. Medical supremacy, it must be understood, implies necessarily more than the mere doling out of drugs, and the nursing and medical care of the patients; it includes the general sanitation, the inspection of supplies, the direction of construction and repairs, the regulation of the lighting, heating, and water supply, and a host of other details that can not be safely intrusted to any one not fully acquainted with, and fully in accord with, the direct and ultimate objects of the institution. It would be as correct to say that the paymaster of a man-of-war should be supreme over the captain and the admiral, as to claim preëminence for a "business" man without professional qualifications in a hospital, or, more especially, an asylum. As long as the administrative department is in full accord with the medical, and recognizes its right to dictate on all matters even remotely pertaining to the proper functions of the establishment, there may be no gross mismanagement, but human nature seldom furnishes all the requirements for this state of affairs, and it is easy to see how, without this, lay supremacy in purely medical institutions can only lead to mismanagement and abuses.

This is the plain, common sense view in the case, and it ought to require no illustrations of its truth to the average citizen who gives it any consideration whatever. If illustrations are wanted, however, they can be had in abundance, and opposing facts are absolutely wanting. Every medical establishment in the world that is worthy of being cited as a model is such, only so far as it is under absolute medical authority. In successful general hospitals the word of the clinical staff is law to the administration, and the only asylums in the country that are worthy of the name, or that are not a reproach to the communities that support them, are under exclusive medical control.

Even the most sacred obligations of religion are no security against abuses, as was shown in the recent *exposé* of the Mariaburg Asylum in Prussia, which, it is to be hoped, will have some effect in counteracting the agitation that is being made in Germany in favor of placing asylums under lay (clerical) control. Ecclesiastics and business men are alike unfitted to have chief charge of institutions for the care of the invalid and the insane; the medical authority should be supreme. Any other arrangement is abnormal, and while it may be accepted for want of a better one, and while in some rare instances, by reason of the good judgment of the layman in charge and his practical recognition of the superior authority of the physician in all matters of medical importance, it may possibly not work actual disaster, this must be taken only as a happy accident which experience shows to be of rare occurrence.

The State of Illinois tried for years in its medical charities the system of a divided responsibility, but was forced to abandon it, and the reasons why the chief control of such institutions should be medical are logically stated in the following quotation from a special report of the State Board of Charities on one of the Cook County institutions in 1886:

"The reason why a medical man should be at the head of this hospital, rather than a business man, is that, in a medical institution every question to be decided has a medical bearing, which a non-medical man may not perceive, and the final word on every subject should be spoken by the physician from which there should be no appeal."

The fiction that physicians are not good business men has certainly no such excuse as could be afforded by the experience of Cook County with lay heads of its medical institutions.

Another point is, that the alleged "business" men are seldom anything more than mere politicians who have failed in every private business, and many times have failed even in politics to command a sufficient following to cause their return to elective positions.

OMPHALOPSYCHISM, OR FAITH HEALING, MODERN AND ANCIENT.

The *Lancet* is interested in some mild cases of mind-cure that has obtained a tentative foothold on the shores of Albion. We quote below a portion of a well-written annotation, in the issue of that journal for August 10, in the course of which the editorial writer demands that a law be passed, in England,

which will prevent the experiments of faith-healers being tried upon the persons of helpless children. This is a practical view that may properly be taken, even in this land of free-and-easy habits of thought, in the handling of quackery and superstitions. The American mind tolerates too easily the various phases of crankism; and no doubt lives are lost in that manner, especially in the cases of children and other feeble dependents. The *Lancet* says: "An inquest was recently held upon the body of a girl aged 17, who died in Brixton of acute tuberculosis and peritonitis from a perforating gastric ulcer, having been very ill since last Easter. She had no medical advice because, according to the evidence of the woman in whose house she stayed, 'she trusted in the Lord to heal her without medical aid.' It is useless to point out to people of this cast of mind the falsity of their theological reasoning, but we do think that the Legislature, which takes care to prevent people jumping off the monument or going on ice too thin to bear their weight, might step in and prevent peculiar people and faith-healers from murdering their children by neglect. We should be the last to deny the power of faith, but, as a recognized authority says, 'faith without works is dead,' and it is a canon of theology that the Almighty works by means, and those means humanity is bound to use. The *New Science Review* for July contains an article entitled 'Has Mental Healing any Scientific Basis?' The teaching of this article appears to be that there is a broad field for 'auto-suggestion and systematic concentration with happy results.' The way and means to become properly auto-suggestive is as follows: You say mentally to yourself—even mechanically at first—until the habit is formed, 'I [the real ego] am well. I am strong. I am pure. I am perfect. I am one with the Divine Spirit of Wholeness.' The next step is, 'To insure progress, special times and seasons should be set apart for the focalized thought and affirmation. . . . At times when the objective world, with all its cares and anxieties, may conveniently be barred out, the full glare of the consciousness is turned upon the Divine ideal within, which thereby gradually becomes graphic and ruling.' It is evidently quite easy to become a mental healer, but we seem to remember that this process is not new. There was once a sect in the Eastern Church called the Omphalopsuchoi, who by steadily gazing at their navels were at length rewarded by a sight of the light (created or uncreated) which shone at the Transfiguration. This method, we suppose, is what Mr. Henry Wood, the writer of the article in question, calls 'keeping company with his inner ideal.' However, he does not seem to have much faith in the process he recommends, for he concludes: 'As related to illness, prevention is the end to be sought, so that in time cures may be unnecessary.' If any one by 'keeping company with his inner ideal' can cure a gastric ulcer he would be a most valuable addition to our present therapeutic agents."

THE BENEFICENT MICROBE.

In his presidential address before the British Medical Association, Dr. Russell Reynolds calls attention to the "gradually increasing appreciation of the fact" that the lower forms of life that we include under the general head of microbes, and to which it is the popular fashion nowadays to refer all manner of disease, are not altogether mischievous in the influences they exert on the human economy, but are, on the contrary, often beneficial. Though this is no new medical view, its statement under such circumstances by so high an authority at this time has a certain significance. It is a recognition of a truth that is becoming more and more evident, that we only know as yet a small part of the beneficent functions of these bodies, and that even the maleficent ones may have their uses to mankind. Dr. Reynolds goes at some length into the subject of immunization as indicating this utility and alludes to the long-known facts that bacteria are useful and probably essential in many of the healthy processes taking place in the human body. It has been taken for granted as a fact in physiology that they have their part in digestion, and it seems to be established that they are under certain conditions essential in the life of some higher vegetable types, and in other instances, as in the case of the normal vaginal bacillus, they seem to exercise a directly protective influence. These facts are known to medical men, but in these days of popular "microbe killers," and with the general tendency of the public to absorb a little medical knowledge to its own hurt, a little reiteration and consideration of them may not be altogether a bad thing.

Even the pathogenic bacteria may have their uses in causing a constant and general immunizing process in human populations. Probably, with less frequency of these occurrences and a less general distribution they would be far more virulent when they did attack the system—the fatality of measles and other comparatively harmless infections of civilization among savages, the extra virulence of new epidemics and the occasionally observed proportional mildness of the same disease after it has become common, quite apart from the selective process that might be assumed were the disorders always self-protective or fatal, all point in this direction. While, therefore, there are many of these organisms which mankind could well dispense with, were that possible in any absolute sense, it may be that we are gradually getting better off as regards their influence by their very frequency. Pathologic familiarity may breed a physiologic contempt.

These are only suggestions, and may not be necessarily accepted, but they are permissible ones in the present state of our knowledge, which is still largely in the suggestive phase.

NOTICE TO OUR READERS.

We have been informed that some person to the JOURNAL unknown, is traveling in New York pretending to represent this publication. We have no traveling agents, and no credence should be given any such party—and we *once more* advise that no money be paid to any person on account of the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION. Payments of whatever character should be made to the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION and to no other person whatsoever. Checks or drafts in payment of annual subscription to the ASSOCIATION (membership dues) should be made payable to HENRY P. NEWMAN, M.D., Treasurer.

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CORRESPONDENCE.

Is After the Reviewer.

3910 WALNUT ST., PHILADELPHIA, Aug. 26, 1895.

To the Editor:—In our JOURNAL for the 17th inst., appears a notice of the third volume of the "Twentieth Century Practice of Medicine," in which I am charged with "looseness in the manner of quotation" in my section on the Diseases of Occupations. The charge is based, so well as I can understand it, upon the alleged fact that in quoting a passage from Patissier I did not give credit to the real author and that I ascribed sentiments to Patissier which he did not express.

The exact facts are as follows:

Patissier, a French author, in his *Traité des Maladies des Artisans* (Paris, 1822) page 196, writing of pastry-cooks, says that Cadet-Gassicourt said that these workmen are less debauched than bakers and more gentle and more sociable. Patissier does not include this statement from Cadet-Gassicourt in quotation marks, nor give the reference to the original. He evidently adopts the opinion as his own, else he would not take the care to incorporate it without quotation marks in his own text.

In my article, page 312 (not 512 as your reviewer erroneously has it) I wrote as follows: "As an example of Patissier's method and acumen the following may serve: 'Pastry-cooks,' he quotes, 'are less debauched than bakers, and more gentle and more sociable.' He thinks he sees in pie-dough a mysterious influence that renders a man more sweet and companionable than his fellow who makes bread."

It is to be observed here that I do not say that Patissier *said* so-and-so, but that he *quotes* it. As he does not give the reference to the original, but adopts the statement as his own without noting its rank absurdity, I do not see how I have misrepresented him in concluding that he thinks he sees some mysterious influence in pie-dough. On the contrary, I think that I had a perfect right to nail this on Patissier, and to point out that "this extravagant induction" (not *de*duction, as your reviewer misquotes *me*) "is on a par with much that has been and is still being written" (not *still is being*, as your reviewer misquotes me again) "on the influence of occupation on health."

I submit that your reviewer has made a rather serious charge against me on a rather slight foundation, and that he himself is careless in his quotations. Kindly publish this and oblige, Yours very truly,

JAS. HENDRIE LLOYD.

ANSWER:—The statement made in the review is not invalidated by calling the reviewer "another." It was Cadet-Gassicourt, and not Patissier, who made the statement mentioned, and as he made no comment upon it, there is no evidence that he approved or disapproved it.

Treatment of Typhoid Fever.

GRAND RAPIDS, MICH., Aug. 10, 1895.

To the Editor:—I have just been reading Dr. Woodbridge's article, read at Baltimore, giving quotations from my letters. I notice one mistake. In one of the aborted cases the types read that *four* grains of quinin were given in twelve hours. It should have read *forty* grains. The object I had in mentioning the quinin at all was to show that a large dose had no effect in the fever, and that the medicine did, after the quinin failed to abort the disease.

I have had no typhoid cases this year but have had the druggist put in a stock of Parke, Davis & Co.'s "Woodbridge" treatments and will try the new formula upon the first suspicious case that presents. Sincerely yours,

W. T. DODGE.

What the Code Is.

ORAN, MO., Aug. 26, 1895.

To the Editor:—If allowed space I will make a brief reply to Amicus Veritatis.

To *believers* in the Code, medicine is a *profession;* to non-believers it is used as a *trade.* The Code was written for the benefit of believers and in condemnation of unbelievers and their practices. Any argument on the question should be addressed to believers. To them the Code is effective and has penalties for its violation—but to the unbeliever it is a dead letter. Very respectfully submitted,

W. P. HOWLE, M.D.

A Poser.

SAN JOSE, CAL., Aug. 19, 1895.

To the Editor:—If you have the information at command will you be kind enough to publish, for the information of the readers of the JOURNAL, a list of all countries on the globe in which the medical profession of same are governed by a written code of ethics? Yours truly,

A. C. SIMONTON, M.D.

SOCIETY NEWS.

The Tri-State Medical Society.—The autumnal meeting of this society will be held in Des Moines, Iowa, October 1 to 3. Dr. Howard A. Kelly, of Baltimore, Md., will deliver the Address on Gynecology and hold a clinic; Dr. Sanger Brown, of Chicago, will deliver the Address on Medicine; Dr. Nicholas Senn, of Chicago, will endeavor to be present and will conduct a clinic. Papers have been promised from leading physicians of Illinois, Iowa and Missouri. The meeting promises to be a great success. If there are other physicians who wish to contribute to the program, kindly notify the secretary, FRANK P. NORBURY, M. D.,
1006 Olive Street, St. Louis, Mo.

Steuben Co. (Ind.) Medical Society.—The thirty-fourth annual meeting of the Steuben County (Ind.) Medical Society was held at the Court House, Angola, Ind., Aug. 23, 1895. The following papers were read: The Medical Man, F. B.

Humphreys, Fremont, Ind.; Rheumatism, D. W. Fenton, Reading, Mich.; Modern Therapeutics, T. J. Creel, Angola, Ind.; Some of the Diseases Incident to the Summer Months, T. F. Wood, Angola, Ind.; Hernia, W. H. Myer, Fort Wayne, Ind.; Dislocation of the Shoulder Joint Complicated with Fracture of the Upper Third of the Humerus, C. B. Stemen, Fort Wayne, Ind.; The Treatment of Retrodeviations of the Uterus, C. N. Smith, Toledo, Ohio; Etiology and Treatment of Granular Conjunctivitis, A. E. Bulson, Fort Wayne, Ind.; A Few Thoughts on Strychnia, G. W. McCaskey, Fort Wayne, Ind. A forenoon, afternoon and evening session was held, together with a banquet at Hotel Hendry in the evening. T. J. CREEL, Secretary.

American Dermatological Association.—Program of the nineteenth annual meeting to be held at the Windsor Hotel, Montreal, Canada, Sept. 17, 18 and 19, 1895:

Scientific Session (open meeting) at 10:30 A. M.: Address by the President, S. Sherwell; Angiokeratoma of the Scrotum, Raynaud's Disease of the Ears, Report of Cases, by J. A. Fordyce; Two Cases of Hydroa Vacciniforme, by J. E. Graham; Two Cases of Bromide Eruption, by G. T. Jackson.

Scientific Session at 3 P. M.: The Value and Limits of Usefulness of Electrolysis in Dermatology. General Discussion: Dermatologic Notes, by W. A. Hardaway; The Epitrichial Layer of the Epidermis and Its Relationship to Ichthyosis Congenita, by J. T. Bowen.

Second Day, Scientific Session at 10:30 A. M.: Remarkable Drug Eruption, by F. J. Shepherd; A Hitherto Undescribed Sequel of Non-Parasitic Sycosis, by J. A. Cantrell and J. F. Schamberg; The Infected Scratch and its Relations to Impetigo and Ecthyma, by H. G. Klotz; A Contribution to the Study of Mycetona, by J. N. Hyde.

Afternoon Session at 3 P. M.: Unusual Papulo-Pustular and Fungating Bromid of Potash Eruption in a Baby (illustrated), by G. T. Elliot; An Etiologic Puzzle, by J. C. White; Studies on some Dermatologic Subjects, by A. R. Robinson.

Third Day, Thursday, Sept. 19, Morning Session at 9:30 A. M.: A Unique Case of Agminate Folliculitis of Parasitic Origin, by M. B. Hartzell; Note on Antiparasitic Treatment of Eczema, by J. Zeisler; The Treatment of Erysipelas based upon a Second Series of Fifty Cases, by C. W. Allen; Notes on Drug Eruptions, by J. A. Fordyce; A Further Study of Alopecia Præmatura and its most frequent Cause, by G. T. Elliot.

Afternoon Session at 3 P. M.: The Prevalence of Germ Dermatoses, by J. C. White; Symbiosis of Cutaneous Eruptions, by J. Zeisler; Sleep in Its Relation to Diseases of the Skin, by L. D. Bulkley; Exhibition of Photographs of Unusual Cases, by H. W. Stelwagon; Urticaria Pigmentosa—Case Twenty Years Under Observation, by P. A. Morrow; Note on the Elastic Circular Bandage, by G. H. Fox.

Officers for 1895: S. Sherwell, President, Brooklyn; J. A. Fordyce, Vice-President, New York; C. W. Allen, Secretary and Treasurer, New York.

BOOK NOTICES.

Jahrbuch der Practischen Medicin, edited by DR. J. SCHWALBE. Pp. 666. Stuttgart: Ferdinand Enke. 1895.

With the large amount of literature which appears annually in each department of medicine, it is impossible for the average reader to keep posted upon the whole field by means of the current periodicals. By the publication of annual volumes which briefly cover the whole ground, it becomes comparatively easy for the student in special departments of medicine as well as the general practitioner to become intelligently acquainted with the progress which is being made throughout the whole domain of medicine, without excessive effort or waste of time. Of books of this character the one under consideration is an excellent example. The contents are arranged under thirteen chapters, which are given the following headings: General Pathology and Pathologic Anatomy; Internal Medicine; Surgery; Obstetrics and Gynecology; Diseases of the Eye and Ear; Diseases of the Nose, Throat, Mouth and Larynx; Skin and Venereal Diseases; Pediatrics; Climatology and Balneology; Materia Medica and Toxicology; Legal Medicine and Public Health. Each of these general topics is dealt with by a sub-editor who is particularly fitted to review the literature of his own department. The contents of each chapter are arranged under systematic subdivisions so that one may readily refer to any part desired. In each instance the most important papers of the year are briefly reviewed and only the valuable facts to be gained from them are stated and in a concise manner. The reference to the original articles is given in the text, avoiding any necessity of referring to foot notes or a system of numbers.

The references to German literature are quite complete, and fairly full references are given to the French. It is noticed that there is no mention of some valuable articles by American writers which have appeared during the year. At the end of each chapter is a list of text-books bearing on the subject, which have been issued during the year.

PUBLIC HEALTH.

Hygiene of the Teeth.—In a communication to the Berlin Medical Society, Dr. Ritter reported that after having examined the teeth of 637 persons, more than half of whom were under 15 years of age, he found only 4 with sound teeth. On this basis the number of individuals with their teeth in good condition is only about 6.2 per 1000, which shows how necessary is a scrupulous hygiene of the mouth and teeth.[1]

Wrapping Paper for Articles of Food.—The city of Montpellier is said to be the first in France to adopt regulations concerning the kind of paper to be used for wrapping up articles of food. By a municipal decree, in force for some months, the use of colored paper is absolutely forbidden. Printed paper and old manuscript may only be used for dried vegetables, roots and tubers. For other articles of food, new paper either white or straw-colored, must be used.[2]

Three New Cases of Actinomycosis.—Professor Poncet, of Lyons, has pointed out that actinomycosis is somewhat frequent in the region around that city. Dr. Meunier, of Tours, shows that it is not rare in Touraine, for he reports three cases all of which were at first diagnosed as alveolar abscesses. The microscope corrected this diagnosis and iodid of potash effected a speedy cure of the local lesions, which in one case at least had assumed a very grave appearance.[3]

Variola in Marseilles.—According to statistics furnished by Professor Proust there were during the first six months of 1895, 175 deaths from smallpox in the city of Marseilles. The city has 406,000 inhabitants, hence there were 4 deaths to each 10,000 of population. During the same period, Paris, with a population of 2,424,000, had only 10 deaths, or 0.04 per 10,000, according to N. Martin. In Paris, vaccination and re-vaccination are regularly and seriously carried out; in Marseilles, however, it seems either that the system of vaccination is defective or that the cosmopolitan population refuses to take advantage of the means of protection offered by the authorities against a disease which should claim only exceptional victims. The mayor of Marseilles is a medical man, Dr. Flaissieres, and as our contemporary[4] remarks, it is to be hoped he will be able to overcome this state of affairs.

Epidemic Spread of Cholera in Japan.—Much anxiety is felt in Japan lest the cholera scourge extend throughout that country, notwithstanding the efforts made by the sanitary officials. The *Japan Gazette*, August 1, published in Yokohama, has the following paragraph compiled from facts given by native authorities:

"Fears are entertained in some quarters that this year may

1 Jour. d. Hygiene, July 25, 1895.
2 Jour. de Med. de Bordeaux.
3 Le Progres Medical, 1895, No. 29.
4 Le Progres Medical, 1895, No. 29.

prove one of the most calamitous Japan has witnessed for many years past. To begin with, cholora broke out in the country early in the year, slowly but steadily working its way even to the remote corners of the Empire. Though stringent precautionary measures are taken by the authorities, and the exceptionally cool weather has been prevailing, and the malady has so far been prevented from general spread in a city like Tokyo, we are still in the middle of summer, and the worst may yet be brought about. In Osaka, Hiroshima, and other western cities, the disease shows no signs of abatement. The official report to hand puts the total fatalities from cholera up to the 28th, noon, at 6,592. This is by no means a small figure, though it is small compared with that in 1883 and the year following."

Tubercle Bacilli in Butter.—Roth of Geneva, after demonstrating the frequency of the bacillus of tuberculosis in milk, relates[1] his experiments with cooking such infected milk—from which it appears that a simple ebullition destroys the virulence of milk drawn from cows with sore udders and shown to be very infectious by inoculations on other animals. So far as butter is concerned, cooking changes its taste too much to be used as a means of prevention. Nevertheless, as Rang had already demonstrated, Roth proves that the cream and butter of milk from cows with tuberculous udders will infect guinea pigs; with some samples of butter sold in the market he infected two out of twenty and Broferro has infected one in nine. Unfortunately, there is no method of promptly recognizing the bacillus in butter. Cream may be sterilized by successive boilings, but butter so treated has a somewhat strong taste which, however, disappears after keeping for some time. Butter which is very carefully and thoroughly washed is less liable to be infected and, moreover, it keeps better and for a longer time. Infected milk may also be sterilized by cooking and the butter made from it will be good, though the quantity will be smaller. The most effectual means of preventing the tubercle bacilli in butter is an early diagnosis of infected cattle and their prompt destruction.

Disinfection of the Rooms of Tuberculous Patients.—At a recent séance of the Paris Academy of Medicine,[2] M. Landouzy presented the results of some important experimental researches into the infectiousness of the dust of rooms of tuberculous patients after disinfection, undertaken by Dr. Lalesque, of Arcachon, and M. Rivière, of the Bordeaux Faculty of Medicine. The conclusions of the authors, which confirm those of Cornet and Kirchner, are founded on results obtained by inoculating 70 guinea pigs in the cellular tissue of the thigh with dust taken from rooms inhabited by consumptives with purulent expectoration and after the rooms had been disinfected. The disinfection consisted in placing all hangings, carpets, etc., in a Geneste-Herscher stove, wiping walls and furniture repeatedly with cloths soaked in 1 to 1000 sublimate solution, washing the woodwork with boiling water and then with sublimate solution. The dust for the inoculations was collected from places cleaned with difficulty, such as tables, around the bed and chimney, in corners, cracks in the floor, joints between hearth-tiles, etc. Of the 70 animals inoculated, 57 lived and 13 succumbed to septicemia or tetanus within a few days. When the 57 were killed in from 40 to 45 days, none of the organs showed a trace of any tuberculous lesions whatsoever. MM. Lalesque and Rivière conclude from their experiments, which were made on a much larger scale than those of Cornet and Kirchner, that the measures for cleansing and disinfection, as practiced at Arcachon in localities occupied by tuberculous patients, are perfectly efficacious and suffice to prevent contagion of tuberculosis from the air of such disinfected localities.

Medical Climatology of Chili.—Chili, which is one of the most thickly populated countries of South America for its size—751,216 sq. kilom.—has the shape of a long, narrow strip, 3,000 miles long, washed by the Pacific and bounded by the Argentine Republic, Peru and Bolivia. On the east are very high peaks, among them Aconcaqua, with numerous spurs; on the west the Coast Range. Between these mountain chains is the central valley. A great part of the country is rainless and arid, especially in the north. The guano industry is highly developed here. In other regions, rains are abundant and heavy and agriculture is successful. The climate, on the whole, may be said to be agreeable and the mean temperature varies between 10 and 18 degrees C. The temperature record of the four principal cities is as follows:

	Santiago	Copiapo	Talca	Puerto Montt
Winter	7.80°	13.0°	7.88°	8.44°
Spring	13.06°	17.78°	14.42°	11.72°
Summer	18.47°	22.69°	——	11.43°
Autumn	12.68°	17.18°	14.01°	11.96°

The population, including 50,000 nomad Indians in the south, is estimated at 2,958,418, of which 42 per cent. is urban. The annual increment is about 45,000. The annual mortality shows the following oscillations: 1849-1875, 26.3 deaths per 1,000, or 1 for each 1,000 inhabitants; 1876-1885, 21.7 deaths per 1,000, or 1 for each 40 inhabitants; 1886-1889 30.3 deaths per 1,000, or 1 for each 34 inhabitants. The Chilian hygienists attribute this large mortality to a number of causes—absence of good drinking water; want of proper means of disposing of the filth, which impregnates the soil; the action of the marshes, which are produced by the inundations of the Biobio; the damp, cold atmosphere; the dampness of the houses, which are built in earth, etc. It is interesting to note that some departments which are close to the Biobio River have a high mortality—Talcahuano, 1 in 23—while others at a distance from that stream are among the healthiest in the country—Coelemu, 1 in 63. The morbidity is chiefly caused by tuberculosis, variola—in 1892 the deaths from variola were 6,012; while tuberculosis represents 25 per cent. of the general mortality — scarlatina, syphilis, erysipelas, influenza, enteric fever, cardiac lesions, alcoholism, and the *tepidias* of summer, cholerine. Goitre is observed among the inhabitants of the Coast Range at the sources of the streams, but it is not frequent. Among endemic diseases may be mentioned measles, dysentery and hepatic disorders. Santiago, the capital, 1,755 feet above the level of the sea, has a population of about 240,000. The climate is said to be one of the most agreeable in the world and its skies the most beautiful. The system of sewers is still incomplete and leaves much to be desired from a hygienic standpoint. The inhabitants of the province of Santiago suffer from intense variations of electric tension. The electrometer in the same day changes many times, passing from positive to negative, which is exceedingly rare in any climate so far known. Immigration to Chili is small. According to a late census, there are 5,625 foreigners in the province of Santiago, 5,000 of whom live in the city. Valparaiso, with a population of 130,000, is the most important seaport. Part of the town is built on a long strip of land between the Coast Range and the sea, and another part climbs up between the mountains, which gives the town a very singular appearance, especially at night. The hygiene is bad, by reason of a considerable part of the population being crowded together along the shore, with the consequent pollution of the soil due to want of means for disposing of the filth and also by reason of insufficient drinking water. Alcoholism is the curse of the town. In 1894 the police arrested 23,000 persons for drunkenness.[1]

Health Reports.—The following health reports have been received in the office of the Supervising Surgeon-General Marine-Hospital Service:

SMALLPOX—UNITED STATES.

Arizona: Arivaca, August 15, 5 cases; Nogales, August 15, 2 cases.

Illinois: Chicago, July 1 to 31, 3 deaths.

Louisiana: New Orleans, August 10 to 17, 8 cases, 1 death.

Tennessee: Cow Island, July 15 to August 14, 16 cases; Memphis, July 15 to August 14, 8 cases.

Texas: Eagle Pass, August 21 to 23, 8 cases, 5 deaths.

SMALLPOX—FOREIGN.

Dublin: August 3 to 10, 5 cases.

[1] Les Nouveaux Remedes, July 24, 1895.
[2] Bulletin Acad. de Med., July 23, 1895.

[1] Jour. d' Hygiene, July 25, 1895.

Buda Pesth: July 29 to August 5, 1 case.
Calcutta: July 6 to 13, 4 deaths.
Glasgow: August 3 to 10, 3 cases.
Guayaquil: July 26 to August 7, 3 deaths.
London: August 3 to 10, 3 deaths.
Madrid: July 28 to August 5, 5 deaths.
Montevideo: July 13 to 20, 2 cases.
Rio de Janeiro: June 22 to 29, 25 deaths.
St. Petersburg: July 27 to August 3, 1 case.
Warsaw: July 27 to August 3, 1 death.

CHOLERA—FOREIGN.

India: Calcutta, July 6 to 13, 29 deaths.
Japan: Nagasaki, July 16 to 23, 19 cases 15 deaths; Yokohama, July 12 to 26, 13 cases, 11 deaths.

YELLOW FEVER—FOREIGN.

Cuba: Havana, August 8 to 15, 75 cases, 27 deaths; Santiago, August 10 to 17, 34 deaths.
Brazil: Rio de Janeiro, June 22 to 29, 21 deaths.
Mexico: Vera Cruz, August 8 to 15, 9 deaths.

NECROLOGY.

GEORGE KEATING DYAS, M.D., of Chicago, August 24. He had been afflicted with tuberculosis since last March and during the last two months was confined to his home. Dr. Dyas, was a son of the late Dr. William Godfrey Dyas, who was killed by a railroad accident at Park Manor last February, and was 59 years old. He was born at Rathangan, County Kildare, Ireland. At the age of 17 he came to this country. At the breaking out of the civil war he entered the Southern army as a private and rose to the rank of lieutenant. Soon after the close of the war he studied medicine at the Chicago Medical College and was admitted to his profession in this city.

MISCELLANY.

Quintuple Birth in the Dominion.—The Associated Press has received a dispatch from Charlotte, P. E. I., which says Mrs. Alexander Campbell, of Montague, gave birth to five daughters on July 28. Her husband is a tailor and is in his eighty-fourth year.

To Abort Erysipelas.—Bar-iodo-potassic-arsenite.—A medical student in the University of the South, Mr. W. E. DeLong, sends the JOURNAL a letter in which he says that by the hypodermatic use of this agent, he is able to abort erysipelas, by destroying the streptococcus. The same result is claimed by him, when the medicine is administered internally.

Burial of a "Weighty" Man.—A butcher named Brissollier, who died recently at Mondeville, near Caen, in Normandy, had reached the extraordinary weight of 251 kilograms. It was necessary to use great precautions in order to prevent accident with the bier, which weighed about 300 kilos. The coffin was 2 meters long, 1 m. .05 high and 85 centimeters wide, and had to be lowered into the grave by the aid of very strong pulleys. All the persons at the funeral were heavily impressed, says our exchange.[1]

Change in the Wisconsin Pharmacy Law.—The Wisconsin pharmacy law was almost entirely rewritten, and considerably changed, in a statute passed by the Legislature at its session, relating to the practice of pharmacy, the licensing of persons to carry on such practice, and the sale of poisons in the State, the changes made showing an intention to improve the State law on these subjects and make same more efficient in many respects.

Liability of Volunteer in Providing Surgical Services.—Where one, as a volunteer, undertakes to provide necessary surgical services for another, he can not be held liable in damages for the negligence or malpractice of such surgeon as he summons, the Supreme Court of Nebraska holds (Chicago, B. & Q. R. Co., v. Howard, decided June 21, 1895,) provided such surgeon possesses the knowledge and skill ordinarily possessed by other surgeons, and the employer had no reason to suspect that such surgeon would neglect or fail to use his knowledge and skill to the advantage of his patient.

How Doctors' Fees are Collected in France.—Dr. C. had attended a "young person" who was recommended to him by a Mr. D. Failing to receive his fee from either the "young person" or Mr. D., he wrote to the wife of the latter, stating the circumstance and advising that she see the bill paid to avoid scandal. Receiving no reply, Dr. C. sued for the amount of his bill, 420 francs, and Mr. D. sued the Doctor for 5,000 francs for betraying a professional secret. The court decided that the Doctor was entitled to 300 francs instead of 420, and decreed that it be paid by Mr. D. On the other hand, the judge ordered the Doctor to pay 300 francs to Mr. D. for violation of professional secrecy and grave inattention to his duties as a physician. The costs were divided equally.[1]

Large Bequests to Massachusetts Institutions.—Under the will of the late Thomas O. H. P. Burnham, who was for many years a dealer in second-hand books, nearly two-thirds of an estate of $602,562 will go to charitable and educational organizations. The Massachusetts General Hospital was made the residuary legatee, and has been paid $263,048. The Home for Aged Men, and Tuft's College will receive $10,000 each; Children's Home, Children's Hospital, Boston Asylum and Farm School, Washington Home, Massachusetts School for Feeble Minded Children, Perkins' Institute for the Blind and Boston Lying-in Hospital, $5,000, each; Boston Dispensary, Asylum for Aged Females, New England Hospital for Women and Children and Consumptives' Home, $2,000.

Castration as a Sectarian Rite.—The *Lancet* has recently referred to a book, by a French writer, regarding a sect in Russia, known as "The Skoptzies." The *Lancet* paragraph states that "there is a very singular religious sect in Russia, whose chief tenet consists in castration. These ridiculous fanatics are said to be convinced that mankind can only obtain admission to Paradise in a mutilated condition, and consequently all males who join their ranks must submit to be deprived of their testicles, but whether the females have to undergo spaying or any analogous operation is not clear. According to M. E. Teinturier, who has written a book entitled 'Les Skoptzy,' these blind enthusiasts are tolerably numerous; but, happily, there is one good point connected with their particular form of madness—it can not be transmitted hereditarily."

Confidential Communications.—Confidential communications in the Iowa Code, which provides that no practicing physician shall be allowed in giving testimony to disclose any confidential communication properly intrusted to him in his professional capacity, and necessary and proper to enable him to discharge the functions of his office according to the usual course of practice, the Supreme Court of Iowa, holds, in the case of Prader v. National Masonic Accident Association, decided May 28, 1895, covers, not merely verbal communications, but the prohibition of the statute refers to those of any kind by which information of the character of that specified in a statute is imparted. Information of the actual condition of the patient, the court says, may be more readily communicated to or acquired by a physician through a personal examination than by statements of the patient. In many cases, exact knowledge can only be obtained by means of such examination, and it is clear that it is in the interest of the patient to have the information so obtained treated as confidential, as it would be had he known and communicated it verbally. Consequently, it is concluded that the prohibition of such a statute as the above extends to facts which are learned by a physician in the dis-

[1] Le Progres Medical, 1895, No. 29.

[1] Gaz. Med. de Paris, 1895, No. 29.

charge of his duties, from his own observation and examination of the patient. If the facts thus learned are of a confidential character, and are necessary and proper to enable the physician to discharge his professional duty to his client they are protected.

Term of Office for Kansas Insane Asylums.—Under section 3, chapter 113 of Kansas Session Laws for 1879, (paragraph 6188, General Statutes of 1889), which provides that "each insane asylum shall have a superintendent, an assistant superintendent, steward and matron, who shall be chosen by the board of trustees, and shall hold their office for the term of three years," no vacant unexpired or fractional terms are recognized, says the Supreme Court of that State, in the case of State v. Wentworth, decided June 8, 1895, and such officers, whenever appointed, are entitled to hold their respective offices for the period of three years from the date that the appointment of each takes effect.

Annual Report of the New York City Hospital.—This year's report of the above named institution is an elaborately illustrated book. Interior and exterior views of the hospital and its annexes are given, to the number of about twenty that will excite the envy of many a younger, struggling board of managers. The total number of patients receiving care and treatment in all departments of the service, for the year 1894 was 39,012, and the grand total since the beginning of hospital work, Jan. 3, 1891, 656,017. The proportion of patients in the wards of the several institutions receiving absolutely free treatment during 1894 was 64 per cent., and a large proportion of the remainder paid less than the actual cost of treatment. At the New York Hospital in West Fifteenth Street, the number of patients receiving medical or surgical treatment in its wards was 4,878, and the highest census of the hospital was 201, and the lowest 151, the average number of patients being 174. The average number of days of treatment per patient was 13, and the per capita cost was $1.88 plus. Of the total days of treatment of ward patients, namely, 68,183, 84 per cent. were absolutely free. In the Out-Patient Department connected with the hospital, 8,700 patients were treated in its several classes, and the total number of visits of such patients amounted for the year to 40,792, and the number of prescriptions compounded, 35,957. The Ambulance Department at the New York Hospital responded to 1,441 calls, and at the House of Relief to 2,812 calls, the daily average ambulance calls at the New York Hospital numbering 4, and at the House of Relief, 7.

To Prevent Life-Loss from Fires on Shipboard.—The veteran chemist, Dr. R. Ogden Doremus, of New York city, has recently published a plea for the more general furnishing of liquified carbonic acid by ship owners as a life-saving and property-saving expedient, especially on all passenger steamships. Liquified carbonic acid has been quoted abroad as low as 12½ cents per two and one-half pounds, in iron bottles. The published remarks of Professor Doremus contain the following statements favorable to a wider employment of this substance: "About thirty years ago, the United States government appointed a commission to examine and report on methods for saving life on shipboard. I repeatedly exhibited to this commission the efficacy of liquid carbonic acid in extinguishing fires, and suggested that wrought-iron cylinders filled with this liquid should be placed on the decks of vessels and connected with iron tubes passing by the sides of the stanchions into various compartments. Should spontaneous combustion of cotton, jute, coal, etc., occur, the fire would be instantly extinguished by releasing the gas and driving it by its enormous pressure into the hold or compartment of the ship where the fire exists. The commission reported unanimously in favor of this method, and advised the passage of a law by the United States government requiring all our vessels to be provided with such means for extinguishing fires and saving life. Similar experiments were also shown to a committee appointed by the New York Board of Marine Underwriters. The committee commended this mode of putting out fires in the highest terms. With carbonic acid gas released into said compartment from wrought-iron cylinders filled with the liquified gas, the fire could have been extinguished instantly and without injury to the 'high class freight' Liquified carbonic acid is now a commercial article. It is prepared in this city, at Saratoga Springs, and is even exported from Germany."

Treatment of Inebriates at County Expense.—The Wisconsin Legislature enacted, at its recent session, that when any citizen of the State becomes a habitual drunkard and is pecuniarily unable to procure and pay for treatment for such disease, any citizen of the State, the next friend, the attending physician, or any public officer may petition the county court or judge thereof, within and for the county where such habitual drunkard resides, for an order of said court or judge thereof, permitting said habitual drunkard to take treatment at some institution for the cure of drunkenness and drug addictions, established within the State, at the expense of the county, as the judge may select. But no such court or judge thereof shall entertain a petition or make any order to send any person for treatment, as set forth, a second time. Persons treated, who desire to do so, may reimburse the county. The term "habitual drunkard," under this act, it is said, shall include all persons addicted to the use of spirituous, malt or fermented liquors, morphin, opium, cocain, or other drugs or narcotics to such a degree as to deprive him of the power of reasonable self-control.

Intravenous Injections of Mercury.—Intravenous injections of sublimate, introduced by Bacelli and principally employed in the treatment of syphilis, has had different results in the hands of various observers. The general opinion is that they are efficacious, but opinions differ as to their inconvenience and the indications for their use. Görl, in a recent article[1] gives a resumé of the advantages and disadvantages of this method. The injections are painless, provided they are made in the lumen of the vessel. Pain at the moment of injection shows that the point of the needle is not free in the cavity of the vein. These injections enable us to incorporate precise and very small quantities of mercury, which will reassure timid patients and avoid intoxicating those with an idiosyncrasy. A third advantage is the rapidity of action, a fact of the greatest importance in certain cases of cerebral or ocular syphilis. Lastly, Bacelli's method is not dangerous, at least no fatal cases have been reported yet; does not frighten the patients and does not cause any incapacity for work. On the other hand, they are impossible or very difficult in individuals in whom the subcutaneous veins are not visible, obese persons, for example. The principal objection is that their effects are of short duration. It is true that after warding off the most menacing symptoms of syphilis by these injections we may prolong the effect either by subcutaneous or intramuscular injections of insoluble mercurial salts, or by administering the metal in the form of inunctions or pills.

Diabetes Mellitus in a Child.—This disease is rare in children and very fatal; death generally occurs quickly, as a new case reported by Cnopf shows.[2] It occurred in the person of a child aged 2½ years who had always been healthy. During a stay in the country it was noticed that while the child was apparently in perfect health it did not increase in weight as it should from drinking two or three liters of milk daily. This lasted for some weeks, after which the author was consulted. The child was much emaciated, the skin was pale, there was no fever; the nervous system, heart and lungs were negative; the liver, spleen and stomach appeared healthy; there was no diarrhea, but the child vomited the milk from time to time. The author advised that the quantity of milk be diminished and that it be drank cold. Hydrochloric acid and wet packs were prescribed, but this treatment was of no avail. The child wished to drink constantly, day and night, and continued to vomit without signs of any digestive disturbance. Fearing a beginning meningitis, the eyes were examined with negative results. Urinalysis finally revealed the presence of a great quantity of sugar and a little albumin. This was hardly determined when the child was seized with diabetic coma, with the characteristic respiratory symptoms, and died in a few hours. A

[1] Münch Med. Woch, 1895, No. 20.
[2] Münch. Med. Woch,' 1895, No. 18.

necropsy was refused. We are unable to determine exactly the duration of the glycosuria in this case; it may be that therapeusis might have been of some avail if the child had been treated more than four days. Statistics show that in at least nine out of ten cases, diabetes in children is a rapidly fatal disease. In the case detailed neither heredity, cranial or abdominal lesion, traumatisms, convalescence from a grave pyrexia nor any other of the usual causes of the disease in children was discovered. The case emphasizes the importance of a complete and early examination of the urine even in children.

A Neuropathic Family.—Max Nordau relates the pathologic history of a neuropathic family which he observed in Berillon's clinic. The mother is emotional and with exaggerated affectivity. Her sister died paralytic. There are no other exact details regarding other relations, but vague indications of various neuro- and psychopathies. Her husband, who in life was a man of vigorous health, had been dead for many years, and she had borne five children, three of whom were girls. Her daughter, A., born in 1873, did not walk until 5, nor talk until 8. She learned to read and write and sewed as an apprentice to a dressmaker, but without gaining sufficient expertness to obtain a situation as a workwoman. When 20 years and 3 months old she had an attack of epilepsy for the first time, which has been repeated every two or three months since. Each attack is followed by stupor, then by delirium lasting many hours or days. For the last year she has had paralysis of the tongue and all the limbs, which is constantly progressing. Her mental state is also constantly deteriorating and rapidly tends toward dementia. Her sister C., born in 1874, was always sickly and feeble. Otitis media caused a slight deafness; character diffident and undisciplined. She witnessed the attacks of her sister which impressed her profoundly. In March, 1895, at exactly the same age, 20 years and 3 months, she had an epileptiform attack, which has been repeated several times since; and always with phenomena which enable us to exclude true epilepsy. A brother, born in 1871, having witnessed one of the epileptiform attacks of C. in his turn had precisely similar attacks. One daughter and a son present no anomalies. This is a case of family contagion. A. alone is a true epileptic; C. had a "suggestion" that she was bound to have the same sickness as her sister and at the same time; and M. by unconscious mimicry, reproduced the accesses of C.[1]

The Physics of the Bicycle.—When a wheelman is moving forward on a bicycle, what keeps him up? is a question often asked, as the rider passes swiftly along on a wheel base practically without width. Sitting on a still wheel is an almost impracticable feat; but it is simple enough to maintain an upright position when moving at a very slow speed. It is a physical fact that a body in motion persists in maintaining its plane of motion, and unless some additional force acts on the body at an angle to the original line of motion, it will continue to move in its original plane until stopped by friction or arrested by an obstruction. A body set in motion tends to move in a straight line, and will do so unless affected by a force acting on it in a different direction from that of the first movement. A wheelman is propelled through space at a velocity sufficient to cause him to maintain his plane of movement. Should he desire to change this plane of motion, as in describing a curve, he can do it only by calling in the aid of gravity, *i. e.*, he must lean to the concave side of the circle. more or less, according to the radius of the curve he is following. And further, in describing a curve, he is impelled outwardly by centrifugal force, which is more or less, according to his velocity, and he must oppose this force by a centripetal force, which in this case is gravity. This he does also by inclining his body toward the center of curvature of the path he is describing. In this case the wheel sometimes forms a considerable angle with the ground, so that under some conditions it slips from under the rider. The ability of a bicycle and rider in rapid motion to do serious damage in a collision with another machine or with a pedestrian is fully appreciated by few wheelmen. A man weighing 150 pounds and moving at the rate of ten feet per second (which is only about seven miles per hour) has a momentum of 1,500 pounds, leaving out of the account the weight of the wheel. This is sufficient to upset any pedestrian with terrific force. A collision between two wheels, each with a 150 pound rider, spinning at the moderate speed of seven miles per hour, would result in a smashup with a force of 3,000 pounds. In view of these facts, it is no wonder that bicycle accidents are often very serious. The tractive force required to propel a bicycle over a smooth level surface is estimated at 0.01 of the load; calling the load 150 pounds, a force of one and one-half pounds would be required to move the wheel forward, and this calls for a pressure on the pedals of six and three-fourths pounds on a wheel geared in the usual manner. When, however, the road is rough or on an up grade, the case is different. On a grade of 1 in 10, for example, the rider, in addition to the tractive force, actually lifts one-tenth of his weight and that of the machine. With a rigid or semi-rigid tire the rider is obliged to exert sufficient force to lift himself over every obstruction encountered by the wheel; the descent from the obstruction gives back a portion of the power expended in surmounting it, but not all of it. In the case of the pneumatic tire, however, the small obstructions are not an opposing element of any consequence, as the tire yields in lieu of the wheel being raised, and the result is the wheel travels as upon a smooth track.—*Scientific American.*

[1] Le Bulletin Medical, July 24, 1895.

A Brilliant Scheme.—A physician recently answered an advertisement for a partner and received the following circular. The person is not a member of the ASSOCIATION as he claims, and is not on the JOURNAL list, either as member or subscriber. His advertisement was presented to the clerk, who referring to the medical directory, noted that Dr. Henderson was alleged to be a member of the ASSOCIATION and therefore presumably in good standing—in this the directory was wrong. As the JOURNAL has no desire to further the interests of any scheme of this stripe, we turn on the light by printing the document.

This is the advertisement:

PARTNER WANTED.

Thoroughly competent physician, honest, honorable, to take charge of my city office practice and correspondence. A rare chance to right physician, and a fortune to one who perseveres. Address,

Dr. H., 84 Adams St., Suite 81, Chicago.

This is the reply sent to a physician who answered the advertisement:

"*Illinois State Institute of Physicians and Surgeons; devoted to the treatment of Chronic Diseases, Deformities and Surgical Operations. Conducted by a full staff of specialists. Ample facilities for room and board. Office and laboratory, 82 and 84 Adams Street.*

CHICAGO, August 13, 1895.

"Dr.————.

"*Dear Doctor:*—Your letter of recent date has been received in reply to my advertisement for a partner. I am desirous of obtaining a partner to take charge of my city practice, which is almost entirely office work, and of my country correspondence. It is difficult to give you a correct idea in the short space of a letter of all the advantages which are to be had with taking charge of my office. You will observe in the above heading that I am doing institute work which is all outside of the city and is very remunerative, the gross receipts therefrom being about $12,000 last year. The office work is of course from influence within the city and which I can bring to any one who takes the office here. Owing to sickness and three deaths in our immediate family, I have been unable to get out of the city to do any advertising since January of this year, but the receipts from that part have kept up remarkably well. The receipts in city practice are excellent, considering the time of year when there is so little sickness and so many patrons out of town, the receipts of the past month (July) being $65. My object in taking a partner is that I may devote all my time to the road work. I will expect the partner to pay $500 in cash, and in return he will own all the fixtures and stock of medicines that the office contains, and will be entitled to all the receipts of the office that come from within the city. I will then travel and give him half the receipts of the country work for putting up the medicines and doing the correspondence. The actual value of the office is about $800, so you see I do not ask any bonus or pay for goodwill or even full pay for the actual value of the outfit. To do the work in the office requires just such an outfit as I have here and

were we to begin new it would require more capital than this to start. The office expenses, including the telephone, are $27.50 a month. Each box of medicine sent to a patient for one month's treatment averages about forty cents and I get from four to fifteen dollars for it, so you can see the profit. This is the best part of the year for the country work, from September 1 to January 1, and I am satisfied we can clear $800 per month each. The amount you get out of the office work will more than pay your expenses of living, etc., so you will have all the receipts of the road work clear. I have been doing this country work about half of my time the past five years and am a member of the AMERICAN MEDICAL ASSOCIATION, so you see it is all right and legitimate. As an act of justice to my large patronage in the city, and to the large list of patients I am now treating in the country, I am anxious to get a competent man in here. Hoping to hear from you at your earliest convenience, and with best wishes, I am Fraternally yours,

J. P. HENDERSON, M.D."

Hospital Notes.

THE addition to St. Mary's Hospital at St. Louis, Mo., is nearing completion and a portion of the rooms are now in use. The addition is three stories high with a frontage of 100 feet, and will be devoted mainly to wards, operating rooms and a laboratory. It is expected that the entire structure will be ready for occupancy on September 15.——Plans and specifications for the addition to St. Joseph's Hospital at St. Paul, Minn., have been filed with the building inspector of that city. The building will be 135x54 feet in dimensions, four stories high, with basement and attic. It will be constructed of brick with stone trimmings, with steel roof and fire-proof walls.——Articles of incorporation of the St. Alexis Hospital Association of Cleveland, Ohio, were filed August 21. The institution is incorporated to furnish hospital care to all persons, regardless of race, color, creed, or other condition.——The monthly report of the Cleveland State Hospital shows that there were in the hospital on July 15, 996 inmates; that 25 were admitted during the month, and 29 discharged, leaving 992 persons remaining.——The convict prison hospital of the Tennessee Coal, Iron & Railway Company at Pratt Mines, Ala., where State convicts are worked in the coal mines, was burned to the ground August 28. The fire originated from a defective flue and the flames spread so rapidly that the twenty-five inmates were rescued with difficulty. The laboratory and surgical instruments were a total loss.——The new hospital for contagious diseases at Boston, Mass., will be ready for occupancy September 1. The cost of the building was nearly $500,000.

Louisville Notes.

G. A. R.—Elaborate preparations are being made by the local profession for the care of the sick during the encampment. The following are the officers: Medical Director, W. P. White; Secretary, Henry E. Tuley; Assistant Secretaries, T. S. Bullock and C. T. Pope; Chief Surgeon, T. P. Satterwhite; Chief of Ambulance Corps, Samuel H. Garvin; Assistant, L. D. Kastenbine; Chairman of Ladies' Medical Department, Dr. Julia Ingram; Secretary, Anna Lawrence. The following are the chiefs of the ambulance corps divisions: Drs. Peter Gunterman, J. M. Krim, I. N. Bloom, J. M. Mathews, Ewing Marshall, George Simpson, W. B. Doherty, H. H. Grant. Dr. Charles P. Cook will be in charge of the ambulance corps from New Albany, and Dr. T. A. Graham from Jeffersonville, Ind. The members of each ambulance corps will be uniformed and mounted. An ambulance fully equipped will follow each division in the parade; in it will be a driver and surgeon, and two stretcher bearers, with two stretchers. Each chief of ambulance will have ten mounted physicians in his corps, who will notify the ambulance when needed. There will be 120 cots at the City Hospital, 20 cots at the Louisville Medical College, 20 cots at the Kentucky School of Medicine Hospital and 15 at the "Homeopathic" Medical College, if needed, and 15 at St. Joseph's Infirmary. These hospitals will be under the charge of Dr. T. P. Satterwhite and a corps of physicians, who will be arranged in relief corps, two on duty at each hospital at all hours during the day of the parade. These hospitals are located at convenient points along the route of the procession, so little time will be consumed in making a trip with sick or injured. On the day of the great barbecue, when it is expected 200,000 will be fed, there will be two hospital tents with physicians in attendance, on the grounds. The admirable arrangements for taking care of the sick during the G. A. R. encampment are due to the Medical Director, Dr. W. P. White.

Washington Notes.

HEALTH OF THE DISTRICT.—The report of the Health Officer for the week ended August 17, is as follows: number of deaths (still-births not included): white, 79; colored, 56; total, 135. Death rate per 1,000 per annum, white, 22.38; colored, 33.47; total, 25.95.

INSPECTOR OF CONTAGIOUS DISEASES RESIGNS.—Dr. Austin O'Malley, who has had charge of the department of contagious diseases in the health office has resigned and intends discontinuing the practice of medicine. He has accepted a position as professor of English literature in Notre Dame College, Indiana. The duties of Dr. O'Malley in the past will be divided. One physician will have charge of the inspection of cases of contagious disease, while another will be appointed bacteriologist. An excellent laboratory will be provided in the health office.

MRS. ANNA WOLCOTT'S CHARITY.—The will of the late Mrs. Anna Wolcott, which was filed for probate on the 21st inst., directs that her entire estate be turned over to Benjamin P. Snyder and Mahlon Ashford in trust. They are to invest $41,000, and from the income shall use $25 per annum in keeping in order the burial lot of the deceased at Oak Hill Cemetery, and with the balance establish and maintain in the Washington Home for Incurables, in memory of the daughter of Mrs. Wolcott, a ward, to be called the "Lillie Wolcott Ward," for the treatment in the best manner and free of charge of children afflicted with curvature of the spine and kindred diseases. Should the Home for Incurables decline the bequest for the purpose specifically designated, it is provided that the trustees shall select some other hospital in Washington, Baltimore or New York city for the purpose described.

THE PUBLIC SERVICES.

Navy Changes. Changes in the Medical Corps of the U. S. Navy for the week ending August 24, 1895.

August 17, Surgeon S. H. DICKSON, detached from the Medical Examining Board to temporary duty in Bureau of Medicine and Surgery.
P. A. Surgeon H. T. PERCY, detached from the Washington Navy Yard to duty as member of Medical Examining Board, Washington.
Assistant Surgeon C. P. BAGG, detached from the "Monterey" and granted two months' leave.
Assistant Surgeon H. D. WILSON, on arrival of "Monongahela" at Annapolis, detached from that vessel and ordered to temporary duty at the Washington Navy Yard.

LETTERS RECEIVED.

Alleger, W. W., Washington, D. C.; Anderson, R. B., Seguin, Texas; Alta Pharmacal Co., St. Louis, Mo.; Alma Sanitarium Co., Alma, Mich.; Ammonol Chem. Co., New York, N. Y.
Bithinger, W. M., Grady, Ark.; Belt, R. C., Milford, Ohio.
Curtin, W. A., Syracuse, N. Y.; Clark, M. S., Youngstown, Ohio; Cunningham, M. E., Garnett, Kan.; Codman, E. B., Fulton, Mich.; Clark, M. C., & Sons, New York, N. Y.; Carrow, F., Ann Arbor, Mich.
Drevet Mfg. Co., New York, N. Y.
Engelman, G. J., Chocorua, N. H.
Fletcher, W. W., Susquehanna, Pa.
Greenley, T. B., Meadow Lawn, Ky.
Hicks-Judd Co., San Francisco, Cal.; Hun, Henry, Albany, N. Y.; Hummel, A. L., Philadelphia, Pa.; A. L. Hummel, New York, N. Y.
Imperial Granum Co., New Haven, Conn.
Johnson, H. L. E., Washington, D. C.; Johnson & Johnson, New Brunswick, N. J.
King, W. D., Chicago, Ill.; Kelly, Howard A., Baltimore, Md.
Lewis, P. C. Mfg. Co., Catskill, N. Y.; Lenhart, W. C., Columbus, Ohio; Lentz, Chas. & Sons, Philadelphia, Pa.
Mowery, H. W., Marietta, Pa.; Mavity, D. E., Towler, Ind.; Milliken, Jno. T., St. Louis, Mo.
Norris, M. D., Catonsville, Md.
Pollock, R. M., Princeton, Ill.; Parke, Davis & Co., Detroit, Mich.; Polk, R. L., & Co., Chicago, Ill.; Papoid Co., New York, N. Y.; Pepper, Wm., Philadelphia, Pa.
Ridlon, John, Chicago, Ill.; Regensburger, Alfred E., San Francisco, Cal.; Rohé, Geo. H., Baltimore, Md.; Stewart, F. E., Detroit, Mich.; Scott, X. C., Cleveland, Ohio; Sterne A. E., Indianapolis, Ind.; Scribners', Chas. Sons, New York, N. Y.; Schimmel, M. S., Baltimore, Md.
Vansant, E. L., Philadelphia, Pa.
Woodbury, Frank, Glen Summit, Pa.; Woods, G. B., West Alexander, Pa.; Warner, W. R. & Co., New York, N. Y.; Wesener, Jno. A., Chicago, Ill.; Wiley, Z. K., Baltimore, Md.; Wegge, W. F. Oshkosh, Wis.; Würdemann, H. V., Milwaukee, Wis.